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An Investigation of Online Navigation Patterns of Consumers Across Cultures

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AN INVESTIGATION OF ONLINE NAVIGATION

PATTERNS OF CONSUMERS ACROSS CULTURES

by

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ABSTRACT

AN INVESTIGATION OF ONLINE NAVIGATION PATTERNS OF CONSUMERS ACROSS CULTURES

by

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Under the Supervision of Professor Sanjoy Ghose and Professor Amit Bhatnagar

Researchers have been interested in understanding the online purchase intentions of consumers. It's interesting to see why consumers differ in the way they navigate the Internet. However, it's still not very well explored as to what role a country's cultural variables play in online purchase behavior of its users. The goal of this dissertation is to identify the determinant variables of online buying behavior of users from different cultural environments. Hofstede's cultural dimensions are used to understand some of the differences. This study also conceptualizes attitudes toward search on mobile devices vs. desktops. The search behavior on mobile devices is analyzed based on demographic profiles of the e-shoppers.

In Chapter 1, the background of the research is set by looking into the web adoption patterns for multiple needs, and the distinction is made between the users' behaviors focused on actual use of the services offered versus the internet access for general purpose i.e., without any specific service in mind. This helps segment the

consumers based on demographic variables and the social context of the user. The primary factors affecting the internet penetration rate in different countries are looked into too. This gives an important perspective of the key foundation of the e-commerce industry i.e., access to Internet to the populace — which forms the superset of potential buyers. The effects of high education, per capita income and telephone connectivity are explored. It's intuitive to see that credit card penetration level will have a positive correlation with the online purchase rate. In this research, it is found that countries with low credit card penetration have less e-commerce even though the cash on delivery option is available there.

In chapter 2, the consumer behavior in different countries is analyzed through the lens of Hofstede's cultural dimensions – Uncertainty avoidance (UAI), Individualism vs. Collectivism (IDV), Masculinity (MAS) and Long-term orientation (LTO). We use the browsing behavior data of the top 5 e-commerce websites of 45 countries obtained through the Alexa website. In order to approach a conceptualization of cultural dimensions with regards to the web, we work with Hofstede's cultural dimensions and consider how cultures might affect user interface design. It is found that consumers from countries that are high on uncertainty avoidance search for longer durations. In addition to that, consumers from countries high on collectivism are more likely to come to a shopping website from social media websites as compared to that from search engine websites. With the data

collected from Globalwebindex platform, the online purchasing drivers for 36 countries are also explored and it is found that the social network's influence on purchase decision is more for countries with low IDV scores and the chances to buy on social network are less for users of high IDV countries. Similarly, we find that users from countries with low UAI and high IDV are more likely to use private browsing window during the online purchase as it protects the users' browsing behavior data on e-commerce websites. And it's also found that users from countries low on IDV are more likely to write post-purchase online reviews.

The results support the conjecture that examining the cultural dimensions and customers' attitudes for online shopping is critically important for e-commerce players intending to make their mark in the global arena. They should consider these different types of online buying behaviors when it comes to web design.

In chapter 3, we attempt to model consumer choice behavior towards web search engines, taking into account users' demographic and cultural dimensions too. The factors that contribute towards the choice of a consideration set of web search engines are explored—using consideration set theory. The choice of the number of web search engines is modeled, taking into account three different categories of variables i.e., 'who' – which includes consumer characteristics including cultural dimensions, 'what' – which includes information search characteristics and 'why' – which includes attitudinal characteristics. Results of the study indicate that 'Age' and

'Uncertainty Avoidance' have significant effect on choice of number of search engines by consumers. Attitudinal characteristics don't contribute significantly towards explaining the choice behavior towards web search engines but information search parameters are significant in that regard.

In chapter 4, the roles of uncertainty avoidance and the demographic variables are identified in online purchase behavior of mobile-only-internet-users (MOIU) vs. desktop-internet users. It is found that the countries with high IDV scores have higher percentage of MOIU and UAI has no effect irrespective of the fact that internet access with mobile devices offers less data privacy. The more individualistic nations have better infrastructure, they have more opportunities to use other mobile devices like iPad and laptop to access the Internet. So, they are less likely to be mobile only. The effect of income per capita on a PPP (Purchasing Power Parity) basis has no significant effect on MOIU. An explanation for it could be the one mentioned above—the required infrastructure not being in place for potential users to access the Internet on desktops. In addition to that, it is found that the effect of IDV scores and the age of users— on MOIU number—are significant too. Also, the young users, aged between 15 – 29 years, are much more likely to fall into the MOIU category, irrespective of which country they are from.

In chapter 5, we conclude with our findings and identify the limitations and the future research directions.

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I.   INTRODUCTION

Marketing has always been a fast-changing milieu and technology plays a huge role in its evolution. Understanding its changes is pivotal to maximizing the consumers' utilities as well as businesses' bottom line. Needless to say, the Internet has dramatically changed the marketing landscape. European Commission (Eurostat, 2013) defines E-commerce as *"the trading of goods or services over computer networks such as the internet. It can be divided into e-commerce sales and e-commerce purchases according to the way in which an enterprise receives or places orders respectively."* There are different players involved and based on the roles played by different parties in a transaction, it can be classified into—business to business (b2b, e.g. Hoovers), business to consumer (b2c, e.g. Amazon), consumer to consumer (c2c e.g. Shopify) and consumer to business (c2b e.g. Google AdSense).

Buyer	Seller	Class	Example
Consumer	Consumer	C2C	Shopify
Business	Consumer	B2C	Amazon
Consumer	Business	C2B	Survey Monkey
Business	Business	B2B	Hoovers

Table 1: E-commerce Classes

Today, the puzzle to understand e-commerce across the globe gets a lot of attention. However, it's still not very well explored as to what role a country's

cultural variables play in online purchase behavior of its users. There are drastically different e-commerce usage rates among different countries. The modern technology, including information and communication technology (ICT) is widespread now because of globalization and it is at the core to maintaining the intensive worldwide interactions of people and exchanges of goods, services, information, and capital.

Many research studies take it as sign of a fusion of different cultures and the markets into a ''one-world culture'' that would facilitate globally standardized marketing activities (Levitt, 1983). However, this doesn't seem to be the case and many noncultural factors and cultural factors are still there and put constraints on international marketing that have to be dealt with continuously, utilizing various strategies of adaptation, customization or localization. For last three decades, international and cross-cultural marketing research has focused on the standardization versus adaptation debate, which has resulted in the popular classification of ''culture-free'' and ''culture-bound'' products. Thus, for example, nondurable consumer goods like food would be regarded as strongly culture-bound products and therefore those are difficult to standardize, while durable high-interest and high-tech or digital products, like ICT, as well as industrial goods, would be regarded as essentially culture-free products and consequently are easy to standardize (Baalbaki & Malhotra, 1993; Meffert & Bolz, 1994). With respect to

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industrial goods and international technology transfers, however, newer studies reveal that the latter notion needs to be revised. These technical systems, like culture-bound products, are subject to cultural influences to a large degree (Hermeking, 2000).

Initial research on cultural influences on global Internet usage, interface design, and usability — with respect to digital ICT products — has been undertaken by HCI (Human Computer Interaction) and localization specialists. Their results are coherent with a significant number of contributions from international marketing and advertising research, as well as with the research on cross-cultural marketing communications and website design. (Hermeking, 2006).

We start by describing Hofstede's cultural dimensions and then analyze the effects of those —along with the effects of other primary factors — on the internet penetration rate in different countries as this gives an important perspective of the key foundation of the e-commerce industry i.e., access to Internet to the populace as it determines the number of potential buyers. The effects of high education, per capita income and telephone connectivity are explored.

1.1 Hofstede's Five Dimensions of Culture

During his work as a researcher for IBM, Geert Hofstede studied data of employee value scores of this global organization, collected between 1967 and 1973.

In the data, Hofstede identified 4 dimensions of national culture: Power Distance (PDI), Individualism vs Collectivism (IDV), Masculinity vs Femininity and Uncertainty Avoidance. Later, in 1991, a fifth dimension: Long Term Orientation (LTO) was added, based on research performed by Michael Harris, supported by Hofstede.

1.1.1 Power Distance (PDI)

Power Distance Index "represents the level of social acceptance of power asymmetry" (Capece, et al., 2013) but can also be defined as "the degree to which the less powerful members of organizations accept that power is distributed unequally" (Yoon, 2009). Another perspective is that the PDI scores inform us about dependence relationships between superiors and subordinates: in small-power-distance countries, subordinates depend less on their superiors, and expect joint decision making and being able to debate with their superiors, whereas in large-power-distance-countries, subordinates depend more on their superiors, expect discrete decision making on the superiors' part and might consider it being disrespectful to debate or object to decisions or opinions of superiors (Hofstede & Hofstede, 2005). Because of the more general context of this paper, and the questions asked in the survey, Capece's definition may better describe the nature of the measurement that is being observed in this case.

Small Power Distance	Large Power Distance
Inequalities among people should be minimized.	Inequalities among people are expected and desired.
Subordinates expect to be consulted.	Subordinates expect to be told what to do.
Parents treat children as equals	Parents teach children obedience
Quality of learning depends on two-way communication and excellence of students	Quality of learning depends on excellence of teacher.

Table 2: Selected key differences between small and large power distance societies

(Hofstede & Hofstede, 2005)

One example in the marketing context is that of power distance between a child and her parents. In Asian countries, the power distance is high, i.e. children accept the decision of the parent more than they do in western countries. Therefore, in countries with high power distance marketing (and products) should be aimed more at parents than children, and vice versa.

1.1.2 Individuality (IDV)

The individuality index measures cultures on a scale from collectivist (low score) to individualist (high score), where people in collectivist countries identify themselves strongly with the groups in which they belong, with family being one of the most important groups, whereas people in individualist countries are more independent from others, and focused on their selves, the discovery and the expression of their unique attributes. As such, the Individuality index shows, on a society level, "the society's solution for a universal dilemma: the desirable strength

of the relationships of an adult person with the group or groups with which she or he identifies". (Hofstede & Hofstede, 2005) In line with this lies the interpretations that "Individualism highlights cultures characterized by personal achievements, whereas collectivistic cultures by group achievement and group loyalty" (Capece, et al., 2013), and "the degree to which a society emphasizes the role of the individual" (Yoon, 2009).

Collectivist	Individualist
People are born into extended families or other in-groups that continue protecting them in exchange for loyalty.	Everyone grows up to look after him- or herself and his or her immediate (nuclear) family only.
Harmony should always be maintained and direct confrontations avoided.	Speaking one's mind is a characteristic of an honest person.
Trespassing leads to shame and loss of face for self and group.	Trespassing leads to guilt and loss of self-respect.
Slower walking speed.	Faster walking speed.
A smaller share of both private and public income is spent on health care.	A larger share of both private and public income is spent on health care.

Table 3 - Selected key differences between collectivist and individualist societies

(Hofstede & Hofstede, 2005*)*

In collectivistic countries, loyalty, and therefore trust, is stronger within groups than across groups, and breaking the loyalty of one's family is one of the worst things one can do (Hofstede & Hofstede, 2005). In individualistic countries, people are more used to building (trusting) relations with other individuals (and organizations, groups), based on their own judgment and regardless of group belonging, and as a consequence more used to place trust in them. Thus, argues

Yoon, a "collectivist may express less trust toward an online shopping mall than an individualist". Hence, trust in e-commerce could be positively correlating with IDV.

1.1.3 Masculinity (MAS)

The Masculinity dimension can be described as "the degree to which a society emphasizes traditional masculine values (such as competitiveness, achievement and ambition), as opposed to others (such as nurturing, helping others, and valuing quality of life)" (Yoon, 2009), and masculine societies are thus characterized by valuing "challenges and social achievements", in opposition to feminine societies, which are characterized by valuing "quality of life, environmental care, security and attention to others". Hofstede's definition of masculine and feminine societies might ring a bit funny in Swedish (very feminine) ears:

"A society is called masculine when emotional gender roles are clearly distinct: men are supposed to be assertive, tough, and focused on material success, whereas women are supposed to be more modest, tender, and concerned with the quality of life.

A society is called feminine when emotional gender roles overlap: both men and women are supposed to be modest, tender and concerned with the quality of life."

Perhaps "the degree of cementation of traditional western gender roles in a society" or "the degree to which traditionally masculine attributes are attributed to men" would be more in line with Swedish values.

Feminine	Masculine
Relationships and quality of life are important.	Challenge, earnings, recognition, and advancement are important.
Both men and women should be modest.	Men should be assertive, ambitions, and tough.
Both men and women can be tender and focus on relationships.	Women are supposed to be tender and take care of relationships.
Both boys and girls are allowed to cry, but neither should fight.	Girls cry, boys don't; boys should fight back, girls shouldn't fight at all.
Grooms and brides are held to the same standards.	Brides need to be chaste and industrious, grooms don't.

Table 4 - Selected key differences between Feminine and Masculine societies

(Hofstede & Hofstede, 2005)

1.1.4 Uncertainty Avoidance (UAI)

The uncertainty avoidance dimension measures "the degree to which people avoid uncertain situations" (Capece, et al., 2013), "the degree to which people feel threatened by uncertain, unstructured situations and ambiguity" (Yoon, 2009) or "the (In)tolerance of Ambiguity in Society" (Hofstede & Hofstede, 2005).

Weak uncertainty avoidance	Strong uncertainty avoidance
Uncertainty is a normal feature of life, and each day is accepted as it comes.	The uncertainty inherent in life is a continuous threat that must be fought.
Low stress and low anxiety.	High stress and high anxiety.
Lenient rules on children on what is dirty and taboo.	Firm rules for children on what is dirty and taboo.
What is different is curious.	What is different is dangerous
In shopping the search is for convenience.	In shopping the search is for purity and cleanliness.
There is fast acceptance of new products and technologies, like e-mail and the Internet.	There is a hesitance toward new products and technologies.
Risky investments.	Conservative investments.

Table 5 - Selected key differences between weak and strong uncertainty avoidance societies

(Hofstede & Hofstede, 2005)

1.1.5 Long versus short-term orientation (LTO)

The Long versus short-term orientation dimension is describing the values of striving for long-term results in the future (indicated by identifying oneself with persistence or perseverance, and thrift), contra expecting to see immediate results today (indicated by identifying oneself with values such as protecting ones "face", and the focus on the self).

In societies on the long-term orientation end of the scale, characteristics that govern the way of life are particularly persistence and thrift. Furthermore, having a sense of shame which, read in its Confucian context, implies being guided more by moral and virtue than being guided by juridical law and fear of punishment (The

Hofstede Centre, u.d.), (Wikipedia, 2014). On the other end of the scale, in societies on the short-term orientation end, people are characterized by respect for tradition, by strong identification with social status, social pressure to spend money, and a sense of importance of fulfilling the duties and living up to the expectations of one's role. The concern with "face", which lacks a proper translation to English, but can be explained as a form of respect in the eyes of one's community, also belongs to the short-term end of the scale. Long-term orientation is thus defined as —"The fostering of virtues oriented toward future rewards – in particular, perseverance and thrift." And short-term orientation is defined as "The fostering of virtues related to the past and present – in particular, respect for tradition, preservation of "face" and fulfilling social obligations" (Hofstede & Hofstede, 2005)

Short-term orientation	Long-term orientation
Efforts should produce quick results.	Perseverance, sustained efforts toward slow results.
Social pressure toward spending.	Thrift, being sparing with resources.
Respect for traditions.	Respect for circumstances.
Concern with personal stability.	Concern with personal adaptiveness.
Concern with "face".	Having a sense of shame
Concern with social and status obligations.	Willingness to subordinate oneself for a purpose.

Table 6 - Selected key differences between Short-term and long-term orientation societies

(Hofstede & Hofstede, 2005)

1.2 Consumption of the Internet: Literature Review

From a marketing point of view, research on global Internet usage or consumption has two-fold relevance: First, the Internet as a product of ICT in general is a marketable good and its global or local market potentials are of some profitable interest. Internet consumption may therefore depend on marketing. Second, and more importantly, the Internet is a new channel of communication in addition to traditional media such as newspapers, radio, and TV, through which marketing communication such as advertising or public relations can be spread. Marketing may therefore depend on Internet consumption. Consumption research is an essential precondition for appropriate product design. It tries to uncover how much, by whom, where, at what time, for what purpose, and according to whose preferences the Internet typically is used, as well as how it is used—if it is used at all.

A large volume of research exists on Internet shopper profiles. We know that a variety of motivations and values characterize internet shoppers (Bhatnagar and Ghose, 2004; Brengman et al., 2005; Keng et al., 2003; Li et al., 2006; Rohm and Swaminathan, 2004). Consumer intentions to search and purchase online, for instance, are affected by utilitarian motivations such as convenience, cost considerations, information availability and selection (To et al., 2007). Several segmentation attempts have identified user groups by demographics, attitudes, usage intensity, usage type and purchase motivations. A comparison of US and Belgian

shoppers led to four shopper types named Tentative Shopper, Suspicious Learner, Shopping Lover and Business User (Brengman et al., 2005). Another typology of internet shoppers identified six types: 'New to Net' Shoppers, Reluctant Shoppers, Bargain Shoppers, Surgical Shoppers, Enthusiast Shoppers and Power Shoppers (Cuthbert, 2000) based on specific tactics used such as time taken to make a decision, use of comparison tools and the benefits received from the shopping process itself. Four groups – Convenience, Variety, Balanced and Store Oriented- were identified specifically for grocery shopping (Rohm and Swaminathan, 2004).

1.2.1 Internet Diffusion Pattern Across the Globe

The Worldwide Disparity Worldwide Internet consumption data over the last decade show remarkable national differences in the numbers of Internet users. In early 2000, for example, most Internet users still lived in North America (147.5 million), followed by Europe (91.8 million) and the Asia Pacific Basin (75.5 million) according to diverse sources[1]. In early 2005, the percentage of the population using the Internet (''active Web users, at home'') was, for example, in the United States, 48%, in Canada and Australia, 46%, in Sweden, 53%, in Germany, 36%, in the U.K., 38%, in France, 26%, in Spain, 22%, in Japan, 29%, and in Brazil, for example, only

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[1] NUA Internet Surveys—http://nua.ie/surveys/how_many_online/index.html; CIA World Factbook—http://cia.gov/cia/publications/factbook/index.html

6%[2]. Although those figures change continuously over time (and differences between different sources and their definitions of Internet usage exist—online access quotas, for example, are not valid indicators of real usage), there is a clear continuum of descent from high Internet usage in the (often less developed, nonwestern) South.

1.2.2 Factors Affecting the Diffusion of Internet Across Cultures

The diffusion of the Internet from its country of origin, the USA, to other countries of the world depended and continues to depend on several hard factors such as technical infrastructure and income per capita—i.e., economic development. This may be one reason for the Internet's differing popularity in the North and the South—also known as the Digital Divide. But economic development is only one factor. A close look at highly developed countries like France or Japan, for example, with their relatively moderate Internet usage (as defined above), reveals that some cultural soft factors play an even more important role. Specifically, the influence of cultural values on Internet diffusion is reflected in the significant correlation of many countries' Internet consumption data with Hofstede's (1991) country scores along his two cultural dimensions: Individualism and Uncertainty Avoidance. This is demonstrated in Figure 1 with Nielsen's total Internet usage data (''all users'') of five referenced countries in 2001.

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[2] Nielsen NetRatings—http:// www.nielsennetratings.com/news.jsp?section=dat_to

**Figure 1 - Internet usage in different nations, 2016
(http://www.internetworldstats.com)**
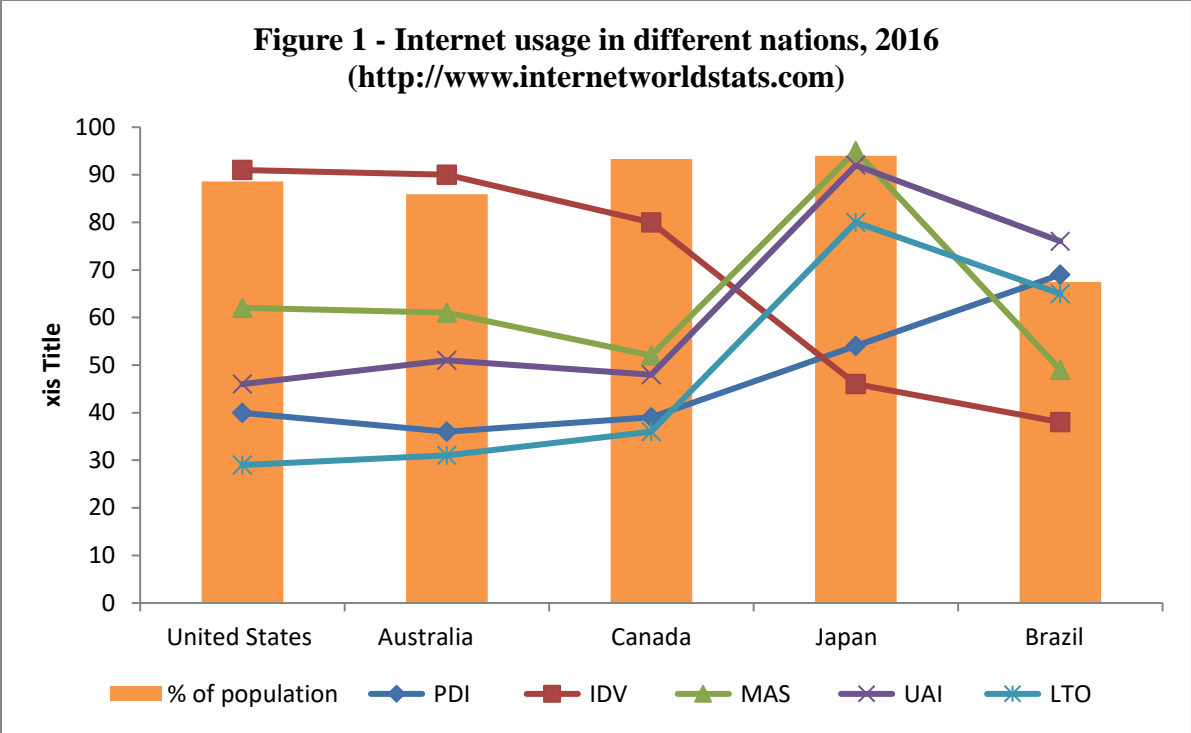
This general tendency of a decrease in Internet usage from the North to the South, as well as a positive correlation with Individualism and a negative correlation with Uncertainty Avoidance, is also evident in the majority of the highly developed countries of Western Europe. This is demonstrated in part in Figure 2.

Figure 2 - Internet usage in European nations, 2016
(http://www.internetworldstats.com)
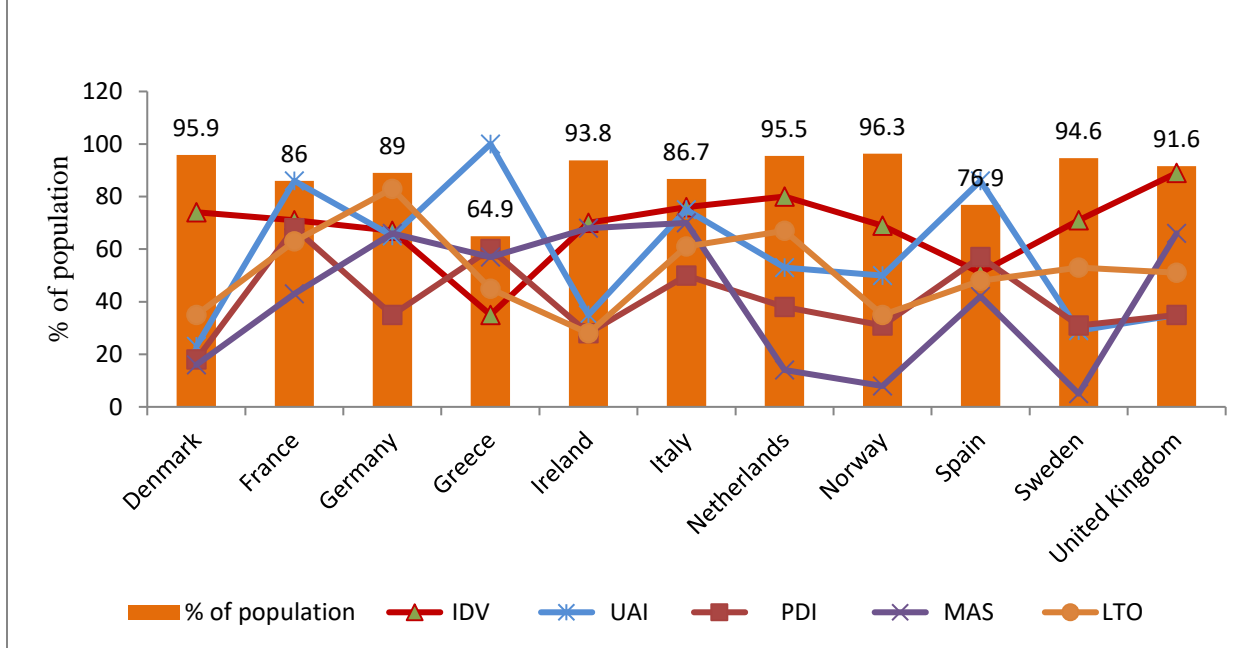
Utilizing Hofstede's cultural dimensions, several marketing researchers (la Ferle, Edwards & Yutaka, 2002; de Mooij, 2000, 2004; Muller & Gelbrich, 2004) have demonstrated that cultures with low Uncertainty Avoidance are more open to innovations like the Internet as a new medium of communication; that is, they tend to be early adopters with a high diffusion rate. Empirical research in 11 European countries by Steenkamp, ter Hofstede, & Wedel (1999) revealed that Uncertainty Avoidance, among other dimensions, is a strong cultural influence on ''consumer innovativeness'' in general. Analyzing consumption data for 56 countries with respect to Hofstede's dimensions and several hard factors, Yeniyurt and Townsend (2003) also found Uncertainty Avoidance, among other dimensions, to be negatively correlated with the adoption of ICT products like the Internet and PCs.

This correlation was weakened by high rates of literacy and international trade, but interestingly not by a high economic development (GDP per capita). In addition to cultural influence, the early dominance of the English language on the Internet, due to its origin in the USA, and the proficiency (or lack thereof) in the English language in some of these low Uncertainty Avoidance cultures could also be relevant to understanding their more positive reaction to the Internet. In general, however, proficiency in the English language and its acceptance as a foreign language may also correlate with Uncertainty Avoidance (negative).

With respect to increasing habituation to and language localization of the Internet, one could argue that it is only a matter of time until all high Uncertainty Avoidance cultures will catch up and show equally high usage rates. However, this does not seem to apply to many of them because some other cultural influences on their Internet adoption, including Individualism and other dimensions identified by Hofstede (Steenkamp et al., 1999; Yeniyurt & Townsend, 2003), seem to play important roles. Differentiating Internet usage in Europe into its culturally most favored purposes, de Mooij (2000; 2004) points out the (negative) correlation of Hofstede's cultural dimensions Power Distance and Uncertainty Avoidance with business purposes, and the (negative) correlation of his cultural dimension Masculinity with education and leisure, for example. Utilizing Hofstede's cultural dimensions and comparing Internet adoption rates in the United States, Japan and

other countries, la Ferle et al. (2002) found correlations with Uncertainty Avoidance (negative), Power Distance (negative) and, again, most significantly, with Individualism (positive).

One factor for adoption of e-commerce is definitely national wealth. It requires some investment in e-commerce infrastructure to make it accessible to the general populace. However, there are several other factors playing their roles in the different adoption rates of e-commerce in different countries. The high-income, educated people were more likely to have adopted the internet by December 2001. (Goldfarb, Information Economics and Policy, 2008). However, conditional on adoption, low-income, less-educated people spend more time online. The research of Goldfarb shows four possible reasons for this pattern: (1) differences in the opportunity cost of leisure time, (2) differences in the usefulness of online activities, (3) differences in the amount of leisure time, and (4) selection. The evidence suggests this pattern is best explained by differences in the opportunity cost of leisure time. It also helps to determine the potential effects of internet-access subsidies.

It is clear that the national culture is one of the prime factors for the different online shopping rates among countries. Online shopping also comes up with more perceived risk as compared to a shopping from a physical store. The risk appetites of average users are different in different cultures. Also, it's intuitive to see that credit

card penetration level will have a positive correlation with the online purchase rate. In this research, it is found that countries with low credit card penetration have less e-commerce even though the cash on delivery option is available there. Based on this, the following hypotheses are formed.

H1: Internet penetration rate will be higher in countries with high education, high income, and high telephone connectivity.

H2: Countries with low credit card penetration would have less e-commerce even though the cash on delivery option is available there.

II CROSS-CULTURAL E-COMMERCE TRENDS USING HOFSTEDE'S CULTURAL DIMENSIONS

2.1 E-commerce Adoption

According to a research report by eMarketer[3], retail e-commerce sales— which include products and services (barring travel, restaurant and event ticket sales) ordered via the internet over any device touched $1.915 trillion in 2016, accounting for 8.7% of total retail spending worldwide. While the pace of growth for overall retail sales is slowed due to other macroeconomic factors, the digital portion of sales continues to expand rapidly, with a 22.9% growth rate forecast for 2017.

Figure 3 - Retail Ecommerce Sales Worldwide, 2015-2020
billions, % change and % of total retail sales

eMarketer expects retail e-commerce sales will increase to $4.058 trillion in 2020, making up 14.6% of total retail spending that year.

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[3] https://www.emarketer.com/Article/Worldwide-Retail-Ecommerce-Sales-Will-Reach-1915-Trillion-This-Year/1014369

Asia-Pacific region continues to be the world's largest retail e-commerce market throughout the forecast period, with sales expected to top $1 trillion in 2016 and more than double to $2.725 trillion by 2020. The region will also see the fastest rise in retail e-commerce sales, climbing 31.5% this year. Expanding middle classes, greater mobile and internet penetration, growing competition of e-commerce players and improving logistics and infrastructure will all fuel e-commerce growth in the region.

Online buying comes with higher levels of risks than buying from a physical store because the process is new to most consumers and the transactions happen in a virtual environment with no traditional buying experience. (Lim, Lee & Ben, 2006). One of the most often studied reasons for consumers not buying from online marketplace is the risk of success due to lack of trust (Cheung & Lee, 2000). When web users are exposed to unfamiliar signs and symbols, and non-local web content that are culturally incongruent, it puts more cognitive stress on them, leading to diminished control over the interaction and loss of focus (Luna et al. 2002). Web users from different countries prefer those websites that meet their distinct needs in terms of navigation, security, product information, customer service, shopping tools and other features (Simon 2001; Fink and Laupase, 2000; Luna et al., 2002; Tsikriktsis, 2002

E-commerce acceptance has been described using a number of different models, including diffusion of innovation, Technology Acceptance Model (TAM) and the Benevolence-Competence-Integrity framework, (Beatty, et al., 2011), (Google, Inc, u.d.), where the TAM has been the most popular framework used by researchers.

A comprehensive meta-study performed by Beatty et al (Beatty, et al., 2011) with primary focus on consumer trust in e-commerce provided interesting insights into the research on other theoretical concepts involved in e-commerce acceptance. Among other results, Beatty et al outlines factors found in the 28 reports deemed suitable for their meta-study, and the factors' frequency as antecedents or consequences to use of e-commerce. The table below is a version of their data, and there are clear indications that the components of the TAM are dominating the research in this field. Interestingly, the table lacks convenience, which has been pointed out as one of the most important antecedents by practitioners in surveys made by for-profit organizations.

Factor	Weights out (Antecedent)	Weights in (Consequence)
Usefulness	41	12
Ease of Use	31	2
Competence	21	26
Integrity	21	19
Risk	21	11
Reputation	20	1
Attitude	17	25
Benevolence	16	18
Ability	13	1
Predictability	12	6
Trust	12	42
Cognitive Enjoyment	8	5
Previous Actions	6	6
Use	6	75
Social Pressures	5	1
Other	2	0
Demographics	1	0
Innovativeness	1	4

Table 7 - E-commerce acceptance; Antecedents and Consequences (Beatty, et al. 2011)

2.2 Incentives for Shopping Online

The main reasons to shop online are convenience, price and product selection. (Dibs, 2013) Naturally, shoppers value the advantages of e-commerce over offline retail by being able to shop anytime and anywhere, choose from a broader selection of products, and being given access to product selections previously not offered in the vicinity of their point of location at any given moment. And all of this at a lower price, or at least with the option of easily comparing prices. (Morgan Stanley Research, 2013)

2.2.1 Price

In the US, lower online pricing was the most frequently cited reason for shopping online, with 41% of respondents placing it in their top three (Morgan Stanley Research, 2013), whereas 59% of Swedish respondents mentioned the same (Dibs, 2013), topped by convenience and ease of comparison. In 2014, 58% of the Swedish respondents mentioned lower online pricing, leaving it in a second place behind e-commerce is 'Saving time, easy and convenient' with 64% (Dibs, 2013). In Australia, younger consumers are more reactive to lower prices online and are more prone to buy from online merchants outside of their country. This is not only a reflection of the amount of leisure money – it is also an indication that younger Australians are more prone to trust online merchants. (Morgan Stanley Research, 2013)

2.2.2 Convenience

In recent years, the convenience factor has been the main contributor to e-commerce growth in developed countries, mainly in terms of making everyday life easier, by always being available (e-commerce shops are always open), and by making it easier to compare products and prices (Dibs, 2013), (DIBS, 2014). Developed countries with a significant part of the population in rural areas that lack the shopping options of bigger cities, but online access available, might explain the strength of the convenience factor. In fact, pursuit of convenience is, together with

price, a global motivation that continues to drive e-commerce; 34% of more than 6000 shoppers surveyed across 8 markets mentioned the convenience factors 'to save time' or the ability to 'shop from anywhere at any time' (Morgan Stanley Research, 2013).

2.2.3 Selection

As e-commerce merchants don't have to worry about shelf space when determining their inventory and product variety — and have an option to let the suppliers carry the cost of capital for stock — their ability to carry wider product ranges is much greater than the one of physical stores, where items not carried on the shelves are much harder to sell than items that are. Furthermore, because 'travelling' or navigating between stores is almost effortless, and searching multiple stores simultaneously by using Internet search engines is easy, the product selection immediately available to consumers through the e-commerce channel often widely surpasses the product selection of physical stores. This, of course, appeals to e-commerce customers, who can easier satisfy their particular needs and wants by buying products from near and far with almost equal ease. When asked to mark three reasons for shopping online, 44% of Swedes mentioned 'larger selection' as one of the reasons. (Wahlburg, 2015)

2.3   Culture's Influence on Consumers' Online Purchase Behavior

Consumers' online behaviors in different consumer groups may really be culturally different (Chau, Cole, Massey et. al., 2002). The empirical study of Chau, Cole, Massey et. al. shows that consumers in different countries with different ethnic origins not only use Internet for different purposes, but also, these different purposes may lead them to have different impressions of the same Web sites. An article published in Forbes (Feb. 21, 2000) entitled "Cultural Web Faux Pas" noted "it doesn't matter that your site sells diapers or offers tips on American quilting patterns—disregard cultural differences and your site will be doomed." In The Times of London (Apr. 20, 2000), an article entitled "Are We All Speaking the Same Language?" reports "many companies that elect to rely purely on a Web site to trade internationally are failing to take linguistic and cultural differences sufficiently into account." Culture not only affects how consumers assimilate the information, but also guides their behavior and actions (D'Andade, 1992). The marketing literature is rich with many studies done to explore the effect of cultural factors in online markets. In general, people are more uncertain about the authenticity of an online market place. However, there are several other factors playing their roles in the different adoption rates of e-commerce in different countries. The national culture is one of the prime factors for the different online shopping rates among countries. Online shopping also comes up with more perceived risk as compared to shopping

from a physical store. The risk appetites of average users are different in different cultures.

Trust is a business lubricant and the very foundation of all good relations – social, as well business relations, between private individuals as well as between individuals acting on behalf of companies. Without trust, the parties of any agreement would constantly have to reassure themselves that they are not leaving any possibilities for counterparts to exploit them – a costly and unnecessary distraction from creating value. Trust increases the perceived certainty concerning other people's expected behavior and reduces the fear of being exploited (Gefen, et al., 2003). The fear of being exploited can also be viewed as perceived risk, which is mitigated by trust in a merchant. (Jarvenpaa, et al., 1999)

2.3.1 Various Perspectives on Trust

Beatty et al summarize three theoretical perspectives on trust: psychological, sociological, and economic and organizational. From a psychological perspective, an indication of trust is the willingness of an individual (the trustor) to expose himself to the risk of being exploited by some other actor (the trustee), whereas sociologists argue that trust is built when the trustor is providing a possibility for a trustee to betray or abuse, and the trustee shows trustworthiness by not exploiting that possibility. From an economic and organizational perspective, trust is an important lubricant that reduces bargaining costs, with institutional trust being one

of the most important, representing the belief that third party actions will constrain other actors from acting in an untrustworthy manner. (Beatty, et al., 2011)

Sociologists also argue that arrangements preventing trustees from betraying trustors by creating safeguards against betrayal prevent the formation of trust. (Beatty, et al., 2011) In e-commerce, these types of arrangements, where merchants have more to lose than to win by betraying consumers, are part of the very foundation that e-commerce is built upon, and as such an important part of the institutional trust that greases the online economy. Sociologists instead define these safeguard-arrangements as assurance (Beatty, et al., 2011), but in the scope of online trust, assurance is an antecedent to trust, not a preventer. (Gefen, et al., 2003) In practice, these assurances take the forms of external price- and quality ensuring services that incorporate consumers' ratings and reviews of merchants, pure quality assurance services and consumer protection laws specifically aimed at protecting private consumers in distance trade.

2.3.2 Online Trust and Trust in E-commerce

In e-commerce, it is widely accepted that trust is one of the most important prerequisites for becoming a successful actor in the business. 'Indeed, any e-commerce vendor that fails to establish a trusting relationship with their customers is doomed' (Beatty, et al., 2011). At the same time, the consumers' assessment of trustworthiness is complicated by the fact that consumers rarely engage in direct

interaction with an individual on the merchant's side, rarely visit a merchant's physical location, and rarely inspect the goods firsthand. When lacking experience from previous interactions with a merchant, consumers have to rely on other ways of assessing trustworthiness, and in these cases initial trust — which is evaluated on basis of size, reputation and assurances — is key for the customer to perform a transaction (Jarvenpaa, et al., 2000). The importance of initial trust is, however, diminishing with increased experience. With more experience, other trust kinds of trust and trust antecedents instead become more important.

As a consequence of the stronger impact of institutional and relation-based trust, and the principle that people are by nature loss aversive, which means that losses loom larger than gains, shoppers are likely to be loyal (to some extent) to a merchant that they have experience with. (Kahneman, 2011) This loyalty obviously has implications on the decision making when choosing between different merchants to shop with, once institutional trust in the concept of online shopping has been established; a customer will be willing to pay a premium in excha   nge   for security (Beatty, et al., 2011) and is as well more likely to make a purchase from a merchant with positive track record. An example of this is how e-bay 'Top Rated Seller' merchants grew, on average, 24% faster than US gross merchandise value. (Morgan Stanley Research, 2013)

Trust is widely considered an important antecedent to a consumer's intention to perform e-commerce transactions, where consumers provide details to merchants, that the merchants can exploit for rouge purposes. Consumers do not only have to place trust in merchants in order to commence with a transaction. Whether calculated and intentional or not, the consumers have to trust all parts of the information exchange chain: their own computers (which may be hacked), the communication media (which may be intercepted), the payment gateways (which again may be hacked), and the merchants' data environments (which may also be hacked). In the next part of the transaction – the delivery – there is another set of actors that have to be trusted. While the average consumer might not consider all the risks she is exposing herself to, she will instead evaluate the (compound) risk that she perceives and judge whether or not to provide (and thereby expose) enough personal details for the transaction to take place, and whether or not she believes that the goods she is ordering will be of the promised quality and condition, and will arrive in the place and time, stated by the merchant. As such, the perceived risk, that has to be overcome by trust, can be defined as the consumer's subjective probability that his or her personal or financial information provided in the transaction will be shown, saved, stolen, or otherwise illicitly exploited for rouge purposes, by the merchant or any 3rd party, or that any of the risks to the goods materialize. If Trust is a factor that

helps the consumer overcome the perceived risk, then Trust has a positive impact on Perceived Usefulness. (Gefen, et al., 2003)

However, while trust is important, there are limitations as to its impact on the willingness to perform a transaction. People have levels of consequence above which there is no acceptable risk, no matter how small. (Kahneman, 2011)

2.4   Technology Acceptance Model (TAM)

The TAM was published in 1989 by Fred Davies and has since then been widely used as a model to explain information technology acceptance in general and become one of the most popular models to explain e-commerce acceptance in particular. Though not always deemed the most suitable or precise model to explain behavior and adoption, TAM is popular partly because of its power in linking few factors over which system designers have control, to users' intentions to use the technology (Taylor & Todd, 1995).

TAM is building on models from social Psychology, which explain human behavior by assuming that the best predictor of a behavior is behavioral intention. (A review of the Theory of Planned behavior and research dealing with it can be found in an article from 1991. (Ajzen, 1991)). Intention is, in turn, predicted by attitudes (or beliefs) toward the behavior, and social normative perceptions regarding it (Montaño & Kasprzyk, 2008).
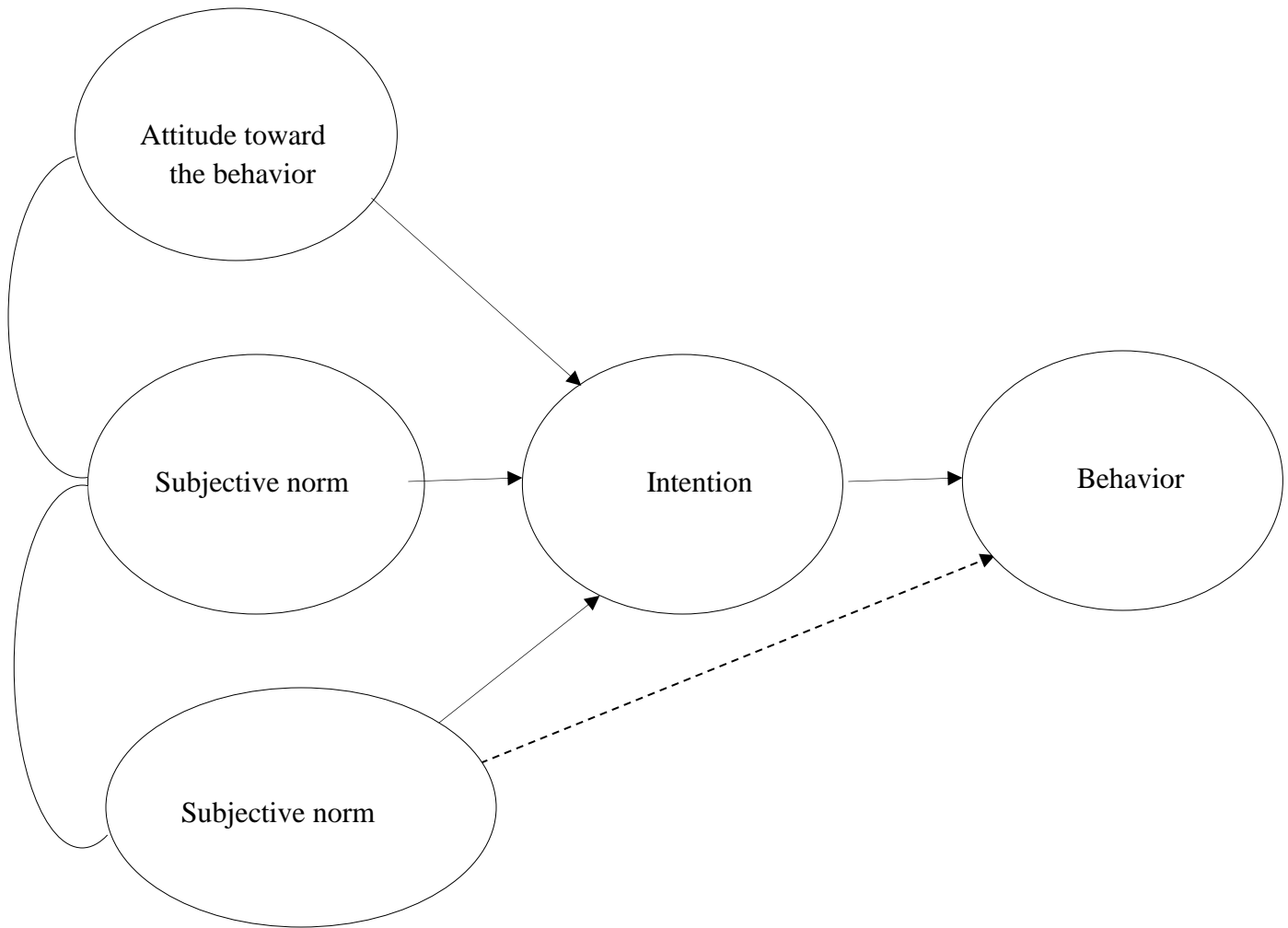
Figure 4 - Theory of Planned Behavior

By replacing the generic construct 'Beliefs' of the TRA with the specific constructs 'Perceived Ease of Use' and 'Perceived Usefulness' (Beatty, et al., 2011), TAM is predicting 'Intention to Use'. Thus, instead of measuring actual usage, and in line with TRA and TPB, the TAM uses Intention to Use as the operationalization of Perceived Ease of Use and Perceived usefulness, where Perceived Ease of Use is the users' belief (built upon experience or not) that an artifact is easy to use, and Perceived Usefulness is the users' belief that an artifact would improve efficiency or effectiveness at performing a task.

More specifically, Perceived Ease of Use (PEOU) is defined as "the degree to which a person believes that using a particular system would be free of effort" and Perceived Usefulness (PU) is defined as "The degree to which a person believes that using a particular system would enhance his or her job performance." (Davies, 1989)

2.4.1 TAM and Trust

Gefen et al (Gefen, et al., 2003) hypothesized and empirically validated that trust is important to online commerce, just as the IUSE antecedents of the TAM (Perceived Ease of Use and Perceived Usefulness) in retaining existing customers for e-commerce businesses. In fact, in the precursors to this paper, trust was shown to be a very strong antecedent to IUSE, whereas in the work of Gefen et al (Gefen, et al., 2003), Trust was shown to be significant, but not as dominating as in the cases above. It is possible that difference in measuring instruments, in terms of survey questions and data treatment could explain this difference.

2.5 Cross-Country E-Commerce Trends

In 2008 and 2013 respectively, a Chinese and an Italian study connecting Hofstede's five dimensions of national culture with the antecedents of e-commerce acceptance defined by the Technology Acceptance Model (TAM) and Trust were performed. Capece et al (Capece, et al., 2013) argue that parts of the Italian national culture, as described by Hofstede's dimensions, are in fact inhibiting the e-commerce acceptance. In another research, the Swedish e-commerce acceptance

(as explained by the TAM) related to national culture is measured in Hofstede's five dimensions.

The question of cultural differences is very relevant in the context of the ongoing e-commerce internationalization where companies look to expand across national borders. When evaluating target markets and – perhaps even more importantly – when entering a new market, cultural differences may need to be attended to, in order to maximize the output of the market entry.

With e-commerce getting popular globally — social, economic and environmental interactions emerge, by virtue of production and consumption of the goods and services being traded by e-commerce as an industry. ICT in general, and e-commerce in particular, are offering (developing nations) opportunities to increase foreign trade with goods as well as services (e.g. travel and hospitality, IT), and are as a consequence changing the distribution of job opportunities on a global scale, as outsourcing of services is facilitated (Terzi, 2011). In addition to that, e-commerce is re-shaping the retail landscape in rural economies in developed countries, exposing merchants to large-scale competition through price and selection offers that cannot sustain a traditional small-scale business. While these merchants may not have the resources, or cannot justify the investment in training and technology, the consequences extend beyond retailers, threatening the socio-economic sustainability of these regions, when the threats are not met (Freathy & Calder Wood, 2014). But

e-commerce also brings opportunities as technology matures and the barriers to use get easier to overcome, even for not so tech-savvy people: services like eBay and Craigslist, along with other second-hand marketplaces help people to sell, reuse and recycle items. Other services, like Etsy and MinFarm (a Swedish startup providing an online selling platform for organic farmers' produce) facilitate direct trade between producers and consumers, offering better reach for small-scale producers at a low cost, potentially leading to improved quality of life for workers as well as animals, as these producers gain market share. However, from an environmental perspective, the aggregated contribution of e-commerce and other long-distance shopping is complex and hard to analyze. There are studies comparing levels of energy consumption between in-store shopping and e-commerce (Williams & Tagami, 2003), but it is very difficult to assess the increased demand for individually wrapped, long-distance goods caused by the increased availability: While it would be unjustifiable for a person from northern Canada to travel to United States, or even 100 miles to the nearest Real Canadian Superstore, to purchase goods on sale, now, with the convenience brought by e-commerce, the items are just an arm's length and a few clicks away. The social, economic and environmental sustainability aspects of e-commerce are complex and need extensive research to be understood.

2.5.1 Influence of Individualism vs. Collectivism on Online Consumer Behavior

As discussed earlier, members of an individualistic society such as the U.S., Canada, or Germany are expected to consider individual interests over interests of the group, and the value placed on individual decision making is high (Cyr et al., 2005). In other words, the members of an individualistic society place more value in individual freedom and decision-making for online purchasing than they do in the opinions of others (i.e. friends and family), or in the degree of purchase rates. In contrast, the members of a collective society have a stronger value for group decision-making and societal norms (Singh, Zhao, & Hu, 2003). In the evolving Internet environment, collectivists may see the risks of buying online as more pervasive than do members of an individualist culture (Jarvenpaa, Tractinsky, Saarinen & Vital, 1999).

Eastern and western cultures are quite different in terms of individualism vs. collectivism, which results in different online shopping behavior [Chau et al. 2002; Huang 2003; O'Keefe et al. 2000; Park and Jun 2003; Park et al. 2004]. Online shopping adoption rates in general are higher for individualist countries. However, for countries with relatively high uncertainty avoidance levels, individualism-collectivism shows little impact on Internet shopping rates. And, for countries with

relatively low uncertainty avoidance level, individualists have higher Internet shopping adoption rates than collectivists. (Lim, Leung, Sia & Lee, 2004).

The social media websites have begun to play a revolutionary role in advertising. This is primarily because of the drastic growth in the number of active users of social media websites like facebook, Linkedin, Twitter etc. Worldwide, there were over 1.94 billion monthly active users (MAUs) of facebook in March 2017 which is an 18 percent increase year over year. (Source: facebook 5/3/17)[4]

Therefore, it's not surprising that firms have started recognizing the importance of advertising on social media websites. In the past, firms could control the information available about them through using the media effectively. Now, the social media make it possible for users to communicate freely with each other, which means, firms have increasingly less control over the information available about them on internet. Therefore, in a collectivist society where people's choices are affected by their network, it is likely that they will land on an e-commerce website after exploring the social media websites first. The consumers, who use Internet more as a social communication device, are more likely to have their view of a product changed through social networking websites as compared to the consumers

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[4] https://techcrunch.com/2017/06/27/facebook-2-billion-users/

who use Internet more for information search purposes only. (Chau, Cole, Massey et. al., 2002). Thus, we hypothesize that:

H3: Consumers from countries high on collectivism are more likely to come to an e-commerce website from social network websites.

H4: The social network's influence on purchase decision will be more for countries with low IDV scores.

H5: The likelihood of buying on social network websites will be less for users of high IDV countries

H6: Users from countries low on IDV will be more likely to post online reviews after purchase

2.5.2 The Role of Cultural Communication Styles

Individualistic cultures' high attraction to the Internet is often attributed to the egalitarian, democratic nature of the Internet (de Mooij, 2000, 2004). The strong influence of Individualism on the consumption of the Internet, which is a relatively impersonal medium of communication is also connected with the essential and product-specific aspects of cultural communication style.

In another study, Germans, Chinese, and Indian consumers ranked sites that were culturally congruent to be more favorable on navigation, presentation, cultural

adaptation, purchase intention, and attitude toward the site than web sites that were less culturally congruent and standardized—home country web sites. (Singh, Fassott, Zhao and Boughton, 2006)

According to Hofstede, culture is "collective programming of the mind which distinguishes the members of one human group from another" (Hofstede, 1980, p. 260). He defines four dimensions that allow differentiating cultures: Individualism/Collectivism, Power Distance, Masculinity and Uncertainty Avoidance. A fifth dimension was added by Hofstede in the later studies too: Long Term Orientation. The effects of these indexes of Hofstede's cultural dimensions behind the hidden relationships between culture and online advertising effectiveness have been researched. Based on three measurements including attitudes towards banner ads, ability to recall banner ads and frequency of clicking banner ads, a research study explored the hidden relationship between culture and online advertising effectiveness. (Ju Bei, 2013)

The attitudinal and behavioral differences between the members of Western and Eastern cultures are attributed to individualist and collectivist cultural tendencies found in these cultures. (Aaker and Maheswaran 1997). Several studies have shown how Hofstede's cultural dimensions affect user acceptance of a technology.

Using Hofstede's theory as basis, it is empirically shown that high uncertainty avoidance in Japan and structural features of the Japanese written language could explain Japanese perceptions about new work technologies such as E-Mail and FAX as compared to that of US. (Straub, 1994). Using Hofstede's dispositions towards masculine attitudes and behavior (MAS) variable, it is shown that gender differences in discourse, in general, would be reflected with women viewing Email as being higher in social presence than men. (Straub et al., 1997). Pavlou and Chai (2002) show the cross-cultural effects in e-commerce adoption by applying the theory of planned behavior (TPB) to understand the drivers of individuals' intentions to buy online and incorporate three of Hofstede's cultural dimensions in their model. Firstly, the relationship between attitude and transaction intention is stronger in collectivist than in individualistic societies. Second, trust has a positive influence on perceived behavioral control in both collectivist as well as individualistic cultures. And, also trust positively influences attitude in both collectivist as well as individualistic cultures. This shows that role of trust is not moderated by cultural differences and therefore trust is a universal driver of e-commerce.

In another paper by Lin. & Pavlou (2004), an empirical study was conducted using data from Greek and US consumers in order to obtain a better understanding of cross-cultural e-commerce adoption. The results give support for the proposed

hypotheses, emphasizing the moderating role of cultural differences on consumer e-commerce adoption.

Singh (2002) suggests that Hofstede's (1984; 1991) cultural dimensions represent a valuable framework for research on web analysis, advertising and web content development. Using Hofstede's (1984) four cultural dimensions and Hall's (1976) context dimensions, Singh et al. (2003) evaluate the level of cultural adaptation of American companies' domestic and Chinese websites. They state, "the web is not a culturally neutral medium, but it is full of cultural markers that give country-specific websites a look and feel unique to the local culture." (Singh, Zhao, and Hu 2003).

Another study employs Hofstede's cultural values to examine the relative influence of the determinants of customer satisfaction in online shopping across the US and South Korea. The results indicate that the levels of relationship of customer satisfaction with its determinants were influenced by national cultures. For example, time saved was found to be a more important factor for customer satisfaction for US customers, compared to Korean customers. Web site aesthetic quality, risk, and customer support were found to be more critical factors for Korean customer satisfaction. (Lee, K., Joshi, K., & Bae, M 2009).

The relationship between online shopping and national cultural differences, controlling for financial variables, is important. In the paper by Goodrich and De Mooij (2011), it has been studied whether similar differences in product acquisition via the Internet exist as via conventional shopping channels. Results suggest that culture, as compared to national wealth, is a significant predictor of Internet buying differences, supporting predictions from prior research (De Mooij and Hofstede 2002).

2.5.3 Influence of UAI on Online Consumer Behavior Across Cultures

Countries with high uncertainty avoidance seek rules and formality to structure life. Uncertainty avoiding societies may be less innovative than uncertainty accepting societies (Hoffman and Hegarty 1993; Kedia et al. 1992; Shane 1995). Cultural values like uncertainty avoidance explain the differences in the corporate venturing process in different countries (Venkataraman et al. 1993). Uncertainty avoiding societies tend to follow organizational norms and procedures (Schneider 1989). Uncertainty avoidance has also been linked with ethical orientation (Boldgettet et al. 2001, Vitell et al. 1993; MacNab et al. 2004), quality control (Lagrosen 2002), R&D (Hoppe 2004), and corporate governance (Hofstede 2004). Uncertainty accepting cultures do not require high levels of rules and formal plans before making decisions (Horovitz 1978); they have higher tolerance for different

ideas and prefer autonomy (Hofstede 1980), have less formal organizations (Hofstede 1997), and less regulations and high codes of behavior (Rodrigues and Kaplan 1998).

The countries with lower uncertainty avoidance and individualistic culture show higher online shopping rates than do collectivist cultures. (Lim, Leung, Sia & Lee, 2004). Many inhibiting factors for e-commerce adoption are discussed in literature too, e.g. – online privacy, the need to physically examine the product, lack of confidence in e-retailers, product quality and e-retaliers' full return policy. (Hui, 2001; Tong, 2010). Trust issues are key inhibitors of e-commerce adoption (Hoffman et al., 1999; van Slyke, Belanger & Comunale, 2004; Palmer, Bailey & Faraj, 2000; Pavlou, 2003). Bhatnagar et al. (2000) argued that the likelihood of purchasing on the Internet decreases with increase in perceived risk. Some key differences have been identified regarding uncertainty avoidance depending on culture of people. There are statistically significant differences in the e-commerce processes of even two neighboring countries that do not show big differences in cultural dimensions. (Goethals, Carugati, Leclercq, 2008)

Information search can be regarded as universal consumer behavior and can be observed in all cultures (Dawar and Parker 1994; Murdock 1945). There are several studies that show that uncertainty avoidance has a significant effect for travel searchers' final buying decisions. (Palmer & McCole, 2000; Money & Crotts, 2003;

Susskind, Bonn, & Dev, 2003). The purpose of Internet use by the consumers is related to what is important to them regarding their evaluation of the website. (Chau, Cole, Massey et. al., 2002).

Many studies, including Litvin, Crotts and Hefner (2004) have shown that uncertainty avoidance plays a key role in travelers' external information search behaviors. Further, Chen and Gursoy (2000) discovered more differences in search behaviors across cultures and call for more future research exploring how cultures search differently.

The implication of uncertainty avoidance for online search behavior is clear. In cultures with low uncertainty avoidance, online shopping will be more readily accepted than in high uncertainty avoidance cultures. Thus, low uncertainty avoidance cultures are expected to have faster rates of diffusion of online information search. And, since IT doesn't allow the social presence in the physical sense, it might accentuate the feeling of uncertainty. Mathew McCool suggests in his book, 'Reaching a Global Audience', that *"uncertainty may be mitigated, at least in some circumstances, through an appropriate user interface, relevant multimedia, restrictive architecture, and search systems that meet important contextual factors"*. The high uncertainty avoidance cultures are expected to do more online searches before making the purchase decision.

Thus, we propose the following hypotheses:

H7: Average time spent searching at shopping websites would be higher for users from countries with higher uncertainty avoidance.

H8: Users from countries with high UAI and high IDV will use private browsing window to access e-commerce websites to protect their data privacy.

2.6   Data Description

The data for testing our hypotheses was obtained from the Alexa website and Globalwebindex online database. Alexa derives its data from the users of the "Alexa Toolbar", which can be downloaded for free by any individual on the web. When individuals surf on the Web, the Alexa toolbar provides useful information about the sites that surfers visit without interrupting their Web browsing. It also gets rid of annoying popup ads. One can search the Web and other resources directly from the toolbar. Surfers can obtain information, such as, traffic information and contact info, about Web sites that they are visiting. Surfers can surf more efficiently with Related Links for each page. Surfers can also share opinions about sites with other users. According to Alexa the number of its toolbar users runs in millions.

We collected data for top 5 e-commerce websites for each country. To avoid the websites having international presence confounding the results, we chose only those e-commerce websites that were specifically present in a particular country. Overall, data for 45 countries was collected.

To test our hypotheses, we collected the following data: Reach percentage (Estimated percentage of global internet users who visit the site), bounce percentage (Estimated percentage of visits to the site that consist of a single page view), average time spent, search percentage, percentage of visitors who came via search engines, percentage of visitors who came via social networking website, and average page load time. Reach percentage is an indication of the web traffic and is expressed as estimated percentage of global internet users who visit the site.

For this study, we used the three-month average reach for each website. For the first hypothesis, we use the average time spent by users on the websites. To test the first hypothesis, we also included information on two other variables, loading speed of the website and age of the website. Website loading speed is based on time taken by Alexa users to download a page. The time is therefore also dependent on the internet connection of the user. We also had information on when the website was created. This allowed us to calculate the age of websites.

The data does have some limitations. Alexa toolbar is available only for the Windows operating system; therefore, websites that are disproportionately viewed by users of other operating systems are discounted. The Alexa toolbar works only with the Internet Explorer browser. This implies that website usage by users of other browsers would be under counted. Alexa states that adoption of its toolbar may vary due to local advertising, language, geographic, and cultural factors. However, since

we are only concerned with country wise reach of websites, this factor may not affect the data analysis.

With the data collected of 36 countries from Globalwebindex platform, the online the social network's influence on purchase decision is explored.

2.7 Empirical Results

A linear regression model was used to test the hypotheses.

H1: Internet penetration rate will be higher in countries with high education, high income, and high telephone connectivity.

For hypothesis (1), the dependent variable, internet penetration level in a country, is regressed against Education_index, Income per-capita and Telephone connection penetration.

Result of H1 is shown below:

Model	Unstandardized Coefficients		Standardized Coefficients	T	Significance Pr > |t|
	B	Std. Error	Beta		
(Constant)	-0.15364	0.12079	0	-1.27	0.2126
Education_Index	0.99464	0.18634	0.6011	5.34	<0.0001
Income_PCAP	0.0332	0.00016	0.35140	3.12	0.0038
Tele_connection	-2.50666E-7	3.87146E-7	-0.05618	-0.65	0.5219

Table 8 - Result of H1 (Dependent Variable: Internet penetration level in a country)

Thus only, Education_Index and Income per-capita have positive effect on internet penetration level. One reason for the telephone connection penetration having no effect on internet adoption could be that fewer homes are having landline connection in today's world and establishing wi-fi networks can be established through independent routers and without telephone connection.

H2: Countries with low credit card penetration would have less e-commerce even though the cash on delivery option is available there.

For hypothesis (2), the dependent variable, e-commerce popularity is regressed against Credit card penetration level (creCapen).

Result of H2 is shown below:

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
1 (Constant)	0.0376	0.07279	0	0.52	0.6086
creCapen	0.50173	0.1353	0.56704	3.71	0.0009

Table 9 - Result of H2 (Dependent Variable: e-commerce popularity for countries with cash-on delivery option)

This affirms our hypothesis that even for countries where cash-on-delivery option is available, credit card penetration still matters when it comes to e-commerce popularity.

H3: Consumers from countries high on collectivism are more likely to come to an e-commerce website from social network websites.

For hypothesis (3), the dependent variable, the proportion of people who come to an e-commerce website via social network, is regressed against country's IDV score.

Result of H3 is shown below:

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	8.64851	0.80079	0	10.80	<.0001
Individualistic	-0.03942	0.01533	-0.18333	-2.57	0.0109

Table 10 - Result of H3 (Dependent Variable: Percentage of users coming to e-commerce websites through social network

The result of H3 also strongly supports the hypothesis and the negative sign of the Beta supports that the higher the IDV score lower will be the percentage of people coming to an e-commerce website through social network websites.

H4: The social network's influence on purchase decision will be more for countries with low IDV scores.

Result of H4 is shown below:

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.2569	0.02049	0	12.54	0.0006
IDV	-0.00188	0.00037719	-0.64961	-4.98	<0.0001

Table 11 - Result of H4 (Dependent Variable: Social network influence on purchase decision)

This supports hypothesis 4 that the social network's influence on customer's purchase decision will be more in collectivism.

H5: The likelihood of buying on social network websites will be less for users of high IDV countries

Result of H5 is shown below:

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.17276	0.01488	0	11.61	0.0006
IDV	-0.00155	0.00027403	**-0.69652**	-5.66	**<0.0001**

Table 12 - Result of H5 (Dependent variable: Likelihood of buying on social network)

It supports that the chance to buy on social network will be less for users of high IDV countries

H6: Users from countries low on IDV will be more likely to post online reviews after purchase

Result of H6 is shown below:

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.48249	0.03475	0	12.54	0.0006
IDV	-0.00175	0.00067022	-0.41865	-4.98	<0.0001

Table 13 - Result of H6 (Dependent Variable: Posting online reviews after purchase)

Hence, structural assurances should have positive impact on trust for high IDV users,

and testimonials and word of mouth (such as user recommendations to other users)

should have stronger positive impact on trust for low IDV populations.

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H7: Average time spent searching at shopping websites would be higher for users from countries with higher uncertainty avoidance.

Result of H7 is shown below:

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-1.38867	0.39990	0	-3.47	0.0006
	UAI	0.11161	0.00524	0.83974	21.32	<0.0001

Table 14 - Result of H7 (Dependent Variable: Average Search Time in minutes)

This affirms our hypothesis that the higher the uncertainty avoidance in a culture the more time its customers spend on e-commerce websites. This can be used in designing the websites in such a way that users can access and compare diverse options quickly and make the purchase decision easily.

H8: Users from countries with high UAI and high IDV will use private browsing windows to access e-commerce websites to protect their data privacy.

Result of H8 is shown below:

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.6841	0.05735	0	11.94	<0.0001
	UAI	0.00221	0.00068594	0.48572	3.22	<0.0001
	IDV	0.00123	0.00069542	0.266644	1.77	0.012

Table 15 - Result of H8 (Dependent Variable: Percentage of users choosing private browsing windows)

It is found that the social network's influence on purchase decision is more for countries with low IDV scores and the chances to buy on social network are less for users of high IDV countries. Similarly, we find that users from countries with low UAI and high IDV are more likely to use private browsing window during the online purchase as it protects the users' browsing behavior data on e-commerce websites. And it's also found that users from countries low on IDV are more likely to write post-purchase online reviews.

III   MODELING CONSUMER CHOICE BEHAVIOR TOWARDS WEB SEARCH ENGINES– A CONSIDERATION SET APPROACH

In this chapter, the attempt is to model consumer choice behavior towards web search engines by taking into account Uncertainty Avoidance Index of the consumer's country in addition to other characteristics. Researching the question of number of search engines used by consumers, the goal is to identify the reason(s) that contribute towards the choice of consideration set of web search engines. Using the lens of consideration set theory, the choice of number of web search engines is modeled by considering three distinct categories of variables i.e., 'who' – which includes consumer characteristics, 'what' – which includes information search characteristics and 'why' – which includes attitudinal characteristics.

3.1   Introduction

Web search engines are like card catalogs for the internet (Koplowitz, 1998) that help in making internet searches economical, easy and productive. The e-consumer of today is so addicted to using search engines that it is hard to imagine life without them. According to Net Market Share[5] (as of April 2017) the global marketing share percentage, in terms of the use of Search Engines heavily favors Google, with over 77%. This again reinforces that fact that Google is the market

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[5] https://www.netmarketshare.com/search-engine-market-share.aspx?qprid=4&qpcustomd=0

leader, however it also highlights that the "Others" such as Yahoo, Bing or MSN, AOL, Excite, Ask-Global etc. still hold a large audience are can't simply be ignored. Although search engines tend to provide meaningful search results, but on their own they are dumb like a box of rocks, because they cannot search anything, unless they are commanded to. Therefore, the use of right words plays an important role in conducting web searches, as right combination of words yields right information. Today websites are being created at a much higher pace than search engines can catalogue them; also, the speed with which the websites change addresses is quite phenomenal, therefore it becomes nearly impossible for search engines to catalogue and present all the information to the consumers (Koplowitz, 1998). In order to have a wide spectrum of search results, consumers tend to use more than one website with search engine feature for desired services— e.g. Expedia vs Priceline vs Cheapoair vs Orbitz vs Travelocity for flight booking. So there is always a 'bunch' of search engines for specific products or services that is of interest to consumers, which they keep in mind while conducting internet search and that bunch of interest is called the consideration set.

The term consideration set is used for a sub-set of alternatives in a product category that consumers seriously consider before making a purchase decision. Ever since the concept consideration set has been introduced by Howard and Sheth (1969), a good amount of empirical work has been done in this field. The basic idea

behind the consideration set approach is that although before making a choice, consumers have an array of brands to choose from, but they shortlist only a few alternatives by way of simple heuristic, this shortlisted set of relevant alternatives is called consideration set and the purchase decision of the consumers is based on the brands that form a part of the consideration set (Alba & Chattopadhyay, 1985; Kotler 2003; Howard & Sheth, 1969; Belonax & Mittelstaedt, 1978; Wright, 1965). Although the number of choices available to the consumer in a given product category are in plenty but all of them do not form a part of the consideration set, rather a much smaller set of available choices is picked and considered before the purchase decision is made (Kardes et al., 1993: Roberts & Lattin, 1991; Nedugani, 1990; Howard & Sheth, 1969). The consideration set can either be stimulus based when the products are readily available in the purchase environment or the consideration set can be memory based when the products are not available externally and have to be retrieved from the memory. The goods that do not make it to the consideration set, often remain outside the realm of consumer's evaluation and have no possibility of being purchased (LeBlanc & Herndon 2001).

Considering the scenario of web based services, one can aptly conclude that web based shopping has not only opened doors to new range of purchasing opportunities for the consumers but has also channelized an appreciative amount of research effort. Researchers of marketing have explored various areas of online

marketing like consumer behavior towards website browsing (Bucklin & Sismeiro, 2003) where the authors tried to predict the purchase behavior of consumer at a website by dividing the online activities into nominal user tasks (NUTs), consumer search and consideration in online markets has been studied by Wu and Rangaswamy, (2003) and Moe and Fader, (2004). Park and Fader, (2004) tried to capture website visit and browsing behavior of consumers. These are only a few areas of research that have been addressed in marketing research but another important aspect of consumer behavior that has not gotten enough attention is consumer's attitude towards usage and preference of web search engines, especially the number of web search engines used by consumers. Questions like, who use these search engines, what information do they look for and why do consumers prefer to use one or more search engines, how are their attitudes placed with respect to usage of search engines etc., have important implications and need to be addressed through research.

In this chapter, the attempt is to address the issue of consumer consideration set formation towards web search engines by answering the above three questions i.e., *who* —who are the users of search engines and characteristics they possess, what —what kind of information do they search for, and why — why do they resort to internet searches, what are their attitudes towards internet and web search engines. Grouping the potential reasons into three distinct categories helps in enhancing the

understanding of the predictor variables and provides better model estimation. The results can be useful for search engine companies to clearly identify the consumer attributes that play an important role in driving the consumer's choice towards search engines, reasons that compel people to go online and the type of information consumers search for and attitudes people hold with respect to search engines. The results also provide valuable inputs to search engine companies regarding managing placements and marketing search engines more effectively and to audience across different demographics and cultures.

3.2   Consideration Set Theory

Howard and Seth (1965) developed a theory that while making purchase decisions consumers consider a limited number of brands, and that limited set of brands is referred to as the consideration set. According to Shocker et al., (1991) consideration set consists of brands or services that are goal satisfying, salient and accessible at a time. Also, research has established that the size of the consideration set is small relative to the number of alternatives available before the consumer (Alba & Chattopadhyay, 1985; Parkinson & Reily, 1979; Howard & Sheth, 1969). Further Narayan and Markin (1975) revealed that before making a consideration, a consumer needs to be aware of all the possible alternatives. The awareness of the consumer constitutes an awareness set, and consideration set is a subset of the awareness set.

Within the awareness set there are three different sets viz, consideration set, which—as defined earlier— is a set for which the consumer holds positive attitudes and considers seriously for purchase/use. Inert set, about which consumer is aware but holds neutral attitudes; brands in inert set are not considered for purchase. Inept set, about which consumer is aware but holds negative attitudes; brands in inept set are also not considered for purchase (LeBlanc & Herndon, 2001).

Previous works on considerations sets have focused on the issue of consideration set size (Belonax & Mittelsteadt, 1978; Jarvis & Wilcox, 1973; Silk & Urban, 1978) and concluded that the size of the consideration set is small 3 to 4. At the same time certain researchers, positioning their research on convenience goods like home appliances, automobiles etc., provided conflicting results with respect to consideration set sizes, for instance the consideration sets of automobiles (Laspersonne et al., 1973) microwave ovens (Belonax & Mittelsteadt, 1978) and stereo systems (Abougomaah et al., 1987) are expected to range from 2.0 – 8.1, which is quite a large range large. Research on consideration sets has also focused on some other aspects viz characteristics of consideration sets (Brown & Wildt, 1987; Brisoux and Cheron, 1990), processes leading to the formation of consideration sets (Roberts and Lattin, 1991; Ratneshwar and Shocker 1991). A number of modeling approaches on consideration sets have also appeared in marketing literature for e.g. Hauser and Wernerfelt (1990) explained consideration

set formation by way of cost benefit approach. According to Hauser and Wernerfelt a consumer will include a brand in his consideration set only if the expected incremental utility is higher than the decision costs that the consumer has to incur by retaining that brand in the consideration set. For this reason, this model is called a cost-benefit approach to consideration set. Further Roberts (1989), Roberts and Lattin (1991) provided an alternative cost-benefit model that can be calibrated to the individual level. In their model Roberts and Lattin use a logit formulation and claim that a brand will be added by the consumer into the consideration set only if the expected increase in utility offsets the associated costs of adding that brand. Basing the study on Australian households, they explain consumer behavior towards consideration set of breakfast cereal.

Since computer mediated shopping has become very popular today (Hoffman & Novak, 1996), consideration sets form a very important part of web based shoppers. From personal products to household goods to financial services even groceries are being purchased online today and there are considerations sets that consumers make use of while making choice decisions. The ease of online shopping also has a significant role to play in changing the shopping habits of consumers and more consumers are getting inclined towards online shopping. Online shopping is attractive channel as not only the products of choice can be searched and purchased online but also the search cost can be considerably controlled therefore search

engines form a very important part of web based technologies. Since there are many search engines available before the consumer to choose from, therefore consumers have a consideration set of search engines that they seriously consider, while conducting an online search.

3.3   Reasons for Consideration Set Formation –Who, What and Why?

Since the choice of consideration set is driven by many factors, we have classified these factors, into three broad headings i.e., 'who, what and why'. Within each category we have chosen variables to explain the possible reasons that drive the formation of consideration set towards web search engines.

Who – this section deals with questions like, who uses the search engines, what characteristics do users of search engines possess. There are various characteristics of consumers that can contribute towards determining their choice of search engines, like degree of experience possessed by the consumer with regards to internet usage. The impact of prior knowledge and experience of the consumer is a relatively neglected area of research. Little work from an empirical perspective has been undertaken to study the impact of prior knowledge and experience on choice behavior of the consumers (Edell & Mitchell, 1978; Olson and Muderrisoglu 1979; Park 1976; Russo and Johnson, 1980). Consumers make product choices by way of heuristics, and the presence or absence of previous knowledge and experience does

affect the way in which consumers process the information (Bettman & Park, 1980). If the consumer lacks experience then he/she spends more time in evaluating levels of attributes and developing a criterion of choice. The effect of prior experience on brand choice is substantial, as experience helps in establishing standards that make it easy for the consumers to choose from a set of alternatives, whereas inexperienced consumers take time in establishing these standards (Bettman & Park, 1980). Product knowledge and experience play an influential role in online information search and processing, and affect the way in which consumers make a choice and develop confidence in that choice (Lee et al., 2004).

Another important characteristic of consumers that may play a key role in determining consumer consideration set of search engines is the type of user, rural or urban. The issue of rural and urban divide is another key area of research in marketing that has not been adequately explored. Most studies focus only on the urban populace (Maheswaran, 1984), rural areas that represent enduring cultural traditions, and unique buying behaviors have got lesser attention (Home, 2002). Since the economic condition of the consumers in rural and urban surroundings is quite different from each other, it gets reflected in the consumption patterns and brand choice behavior of the consumers in both surroundings (Sun & Wu, 2004). Sun and Wu (2004) claim in their research that the attitudes of the consumers towards the whole marketing mix, i.e. price, brand names, promotions and

distribution differ from urban to rural areas and vary depending on the region they belong to. Even Broadridge and Calderwood, (2002) categorized the shopping habits of consumers based on rural and urban surroundings. So much so, the choice pattern of rural consumers with respect to choosing medical services is also quite unique from urban consumers as reported by Tai et al., (2004). Research also points out that the needs and lifestyles of the consumers are different in rural areas from their urban counterparts, in a significant manner (Sun & Wu, 2004). Hence there exists a plethora of opportunities in tapping the rural markets, to which the industry and research community need to be cognizant.

Another important consumer characteristic included in this study is age of the consumer. Age does impact consumer choice behavior; studies reveal that due to increase in age, the cognitive ability of the consumer declines (John & Cole, 1986; Tongren 1988) and old consumers are not as competent in making choice decisions as young consumers. Age becomes a very important classifying factor that contributes towards easy segmentation of the target market. The choice and preferences of old people are quite different from the younger lot. Most of the marketers don't realize this and do not consider old people a worthwhile segment to invest in (Bailor, 2006). But marketers are quite wrong in their perceptions and need to change these outdated ideologies. Old consumers see their retired life as a time

for 'exploration and reinvention' and thus they act as a very promising segment and should be of great interest for the marketers and researchers alike.

What – in this section we talk about the reasons that compel consumers to go online as the type of information that consumers generally seek can be a potential reason driving choice of consumer consideration set towards web search engines. Consumers searching for a product or a service are driven by a goal. Nature of goal that is being pursued by the consumer can tell a lot about consumer's inclination towards certain brands he might consider during purchase (Lawson, 1997). Recognition of need triggers the decision-making process and motivates a consumer to have a consideration set of alternatives (Lawson, 1997). Park and Simth (1989) also found that a strong evidence of goal-driven processing in product level choice behavior towards needs for entertainment. Therefore, goals of consumers do have an impact on the formation of consideration set and choice of an alternative. In this section, we choose three variables that represent three types of search goals that consumers might have while using web search engines, viz, searching for information about travel and ticket reservation, searching for research or educational purposes and finally, visiting an adult website, to view or download adult contents. I feel nature of goal does have an impact on the number of search engines being used by consumers. Since needs or reasons for search are put to actions only if they are

realized as goals (Park & Simth, 1989), so search goals should also impact consumer's choice of search engine and also the number of search engines one uses.

Why - under this category we try to study the attitudes of consumers towards search engines. In the field of web based search engines there are two ways in which search engines accept placements — one is paid placements, where in the sellers can pay the search engine companies for placement in the sponsored section of the search results. This process acts as a faster way of getting visibility on the search engine or else the sellers have to wait a long time before their links show up in the promised sections. Another way in which sellers go about placements of their links on search engines is by way of search engine optimization or unpaid placements where the sellers have to adjust their codes in accordance to the relevance of the search engines, to make the links more compatible (Sen, 2005). Paid placements sometimes have lesser relevance for the consumers who are searching information on a particular topic and most consumers don't trust paid placements and prefer to follow the links displayed in the editorial sections of the of the search results (Hotchkiss, 2004). Since there is a bias in the mind of the consumer against the paid placements it might get reflected in the choice of the search engine and number of search engines used. Therefore, it becomes important to study how the attitude of the consumer towards paid vs. unpaid placements impacts the choice of number of search engines.

Another factor that drives consumers' choice of search engines is the degree of reliance on the search engines which is same as uncertainty avoidance. Reliance and trust are critical factors in any relationship (Jarvenpaa et al, 2000) and their absence may act as a major stumbling block that prevents the transactions from taking place online (Ang et al, 2001). Degree of reliance has had a strong history of research across many disciplines like, management and economics (Dasgupta, 1988; Williamson, 1993), psychology (Rotter, 1980), sociology (Goffman, 1971) and marketing (Morgan and Hunt, 1994; Hart and Johnson, 1999) also, in the field of marketing, reliance has played a key role in determining the behavior of consumers, (Schurr & Ozanne, 1985). The trust factor has been studied in marketing, both in terms of trust in the sales person and also in terms of trust in seller organization (Morgan & Hunt, 1994). The factors that generate trust or reliance in the consumer's mind depend primarily on the ability and motivation of the service provider to be able to deliver on the expectations of the consumer (Jarvenpaa et al., 2000). So we feel trust and reliance in a search engine should also arise from the ability of a search engine to deliver on consumer's expectations. Reputation is another factor that can trigger reliance and usage of a product or service by the consumer (Doney & Cannon, 1997), as high perceptions of trust reduce consumers risk perception and also curtail the opportunistic behavior of the seller (Ganesan, 1994), leading to increased reliance and usage of that product by the consumer. We take the uncertainty

avoidance score of the customers' country as a proxy to measure their reliance on search engines.

Another factor that is included in this segment is the attitude of consumers towards, search engines keeping track consumer search behavior. Since users today have an easy access to the internet, they tend to share more of their information while searching and obtaining goods and services online, and in turn they end up giving an aggregate picture of who they are and what they want (Chen & Rea, 2004). This information tracking and information gathering is a big industry. Consumers hold divergent views towards tracking of their search information, some consumers approve and others disapprove their search behavior to be archived by search engines. Consumer attitude is a strong indicator of consumer choice, as positive attitude induces confidence in the consumer and increases consumer's trust in a product category or brand (Lee et al., 2004). If consumers believe that their privacy is being invaded and search engines are tracking their search behavior, it might upset them, making them reluctant in using more search engines. Consumers concern for privacy is a very important issue that organizations should not take undue advantage of (Wang & Petrison, 1993). As trust is an important factor in relation building, if consumers know that their privacy is not been respected by search engines and their information is being tracked, it might deter them from using search engines (Geyskens, 1998). Research and opinion polls indicate the fact that consumers are

highly concerned about the way companies use their private information, and online shopping behavior of consumers does reflect consumer concerns about privacy (Kehoe, Pitkow & Mortan, 1997).

3.4 Data

Princeton survey research data for this paper, the data is individual level survey data, containing information about consumer demographics, reasons of search on the internet, consumer attitudes and behavior towards internet search engines, frequency, place and amount of internet usage etc. The data is individual level and contains 2200 entries collected between May to June 2014. In order to deal with problem of sparse cells, a sample of 963 individuals was drawn from the data set for this research. Out of which 400 units were used for the hold out sample and remaining were incorporated in the calibration sample.

3.5 Model Specification

Since the dependent variable i.e., the number of search engines used by consumers is a categorical response variable, involving categories like '0' use no search engine, '1' use one search engine, '2' use two search engines and '3' use three or more search engines, the model I am using to study this research question is a categorical Probit Model (Maddala, 1985). The categorical probit model is based on the assumption that if the consumer is choosing from a set of choices, which are

categorical in nature, then choice made by the consumer is based on the outcome of latent utility. Since the utility in this model is categorized into different intervals, the choice of the consumer corresponds to the interval in which the utility for that particular choice falls.

For instance, if an individual i chooses a response c then the utility falls in the following intervals:

$$\gamma_{c-1} \leq U_i < \gamma_c \qquad (1)$$

Where γ_{c-1}, γ_c are observed thresholds and c falls in the intervals 0 through 3.

Also, the utility is defined in terms of a deterministic and random component, the random components are the ones that are not captured by way of the defined variables in the model but do affect consumer's choice.

$U_i = f$ (who, what, why)

    $= f$ (consumer characteristics, information being searched, attitudes towards search engines)

    $= (\beta_1.experience + \beta_2.age + \beta_3. Usertype) + (\beta_4.travel + \beta_5.research + \beta_6.adultcontent)$

    $+ (\beta_7.UAI + \beta_8.paidplcmt + \beta_9.track) + \varepsilon_i$ (2)

Where $U_i < \gamma_0 \rightarrow$ choice = 0; $\gamma_0 < U_i < \gamma_1 \rightarrow$ choice = 1 ; $\gamma_1 < U_i < \gamma_2 \rightarrow$ choice = 2

$U_i > \gamma_2 \rightarrow$ choice = 3

In the above model ε_i refers to the random component, also called the error term and is assumed to follow a mean zero, variance of unity and normal distribution i.e., $\varepsilon_i \sim N(0,1)$.

In this model, the overall utility equals the three different sets of variables that are clubbed under three headings - who, what and why. The purpose of doing this categorization is to find out which of these sets helps in explaining the results better. Who comprises of consumers characteristics, what refers to the information consumers search for and why refers to the attitude of consumers towards search engines. Not only each of these three sets are tried individually from the model estimation perspective but they were also tried in different combinations, in order to find out which set or combination of sets gives a better description of the data.

3.6 Empirical Results

The data set being used comprised of 2200 observations, where each observation represented a survey respondent. The analysis was run after cleaning the data of sparse cells, which reduced the final sample to 963 observations, out of which 400 were used in for the hold out analysis and remaining used in the calibration sample. The full model given in (2) and several different combinations of variable sets were also run, where each combination had at least two categories, for the model estimation variable sets were also run individually and each model tested was taken from the full model (2).

Model	Variables included in the model	Questions addressed by variables	Number of parameters in the model	Log Likelihood of the model in calibration sample	Hit rate of the calibrated model	Log Likelihood of the model in holdout sample	Hit rate of the hold out sample model
1	Only thresholds (no variables)	None	0	-357.63	51.15	-262.18	47
2	Consumer characteristics	Who	3	-137.66	54.35	-266.08	51.25
3	Information searched	What	3	-137.76	55.59	-262.23	52
4	Attitude towards search engines	Why	3	-136.26	53.64	-263.53	49.25
5	Consumer characteristics & Information searched	Who & What	6	-140.13	59.50	-265.95	53.75
6	Attitude towards search engines & Information searched	Why & What	6	-139.17	57.20	-263.49	50.50
7	Attitude towards search engines & Consumer characteristics	Why & Who	6	-140.02	56.31	-268.38	51.75
8	Attitude towards search engines, Consumer characteristics & Information searched	Who, What & Why	9	-141.92	57.90	-268.99	54.25

Table 16: The results of the model comparison - Model Fits and Predictive Performance

There are eight models that are tested and each model's performance is compared with the others based on hit rate and log likelihood ratio. Even the results

of the hold out sample are reported in the table above. Looking at the table 16, one can see that the model 5 which is the combination of 'who' and 'what' is the best model in terms of predictive power or hit rate (59.50) and the results of this model are consistent with the results from the hold out sample. The second-best model is the full model 8 with a hit rate of 57.90 followed by model 6 which is again a combination of 'why' and 'what' and has a hit rate of 57.20. Since the full model contains all the variables hence its predictive power is the best but since our aim is to choose the most parsimonious model, so I choose model 5 as the best fit model with hit rate of 59.50 and log likelihood of -140.13. This model contains six variables housed under two different sets of three variables each i.e. who, which contains - age, experience with internet and user type (rural or urban) and what, which describes the information being searched for like travel-ticket, education-research and adult content. The results of the model fit suggest that consumer characteristics and the purpose of information search reveal the consumer choice of consideration set towards web search engines better than other models.

3.7   Estimated Parameters of the Selected Model

Table 17: Estimates for the who and what model (Model 5)			
	Estimate	**Std error**	**Significance**
Variables for 'who'			
Experience	**-0.012**	0.032	0.71
Age*	**-0.194**	0.060	0.001
Usertype	**.058**	0.249	0.62
Variables for 'what'			
Travel*	**0.385**	0.120	0.001
Research*	**0.299**	0.106	.005
Adultcontent	**-0.094**	0.092	0.31
Thresholds			
Threshold 0	**-2.530**	0.295	0.000
Threshold 1	**-0.168**	0.234	0.47
Threshold 2	**1.620**	0.244	0.000

3.7.1 Consumer Characteristics Parameters

In this category only one parameter is significant i.e., age of the consumer ($p<.01$), the negative sign of the parameter (-.194) indicates that the number of search engines used by the consumers is negatively associated with the age. As the age increases consumers tend to restrict their usage of search engines and choose fewer search engines. The other two variables under this category like user type (rural or urban) and experience with the internet are not significant. The user type has a positive parameter (0.058, $p=0.62$), but this variable is not significantly related in explaining the research question. Also, the estimate of experience with the internet, although negative is not significant ($\beta=-0.012$, $p=.71$), in explaining the behavior of consumers towards number of search engines being chosen.

Overall the results suggest that only the age is significantly related in explaining the choice of number of search engines, age bears a negative relation with the dependent variable, which means that the with age increasing the tendency to use more search engines declines, which is consistent with the literature as older people are not as competent as younger lot in processing and cognitive ability (John & Cole, 1986; Tongren, 1988), and hence they tend to rely on limited number of search engines.

3.7.2   Information Search Parameters

In this category, two of the three parameters are significant. Consumers, who search the information for travel and ticket booking, tend to rely on more search engines. Since the sign of the parameter for travel and search is positive (0.385, $p<.01$), it indicates a positive relation between number of search engines and travel information search criteria. While searching for information on travel, consumers tend to search the information by using different search engines, as the purchase of ticket and travel is highly involved purchase and customers want to grab the best deal, by way of examining enough options through a comprehensive search. This result is consistent with the literature on goal driven purchases; the more important a goal is for the consumer the more involved the consumer gets in its purchase (Park & Smith, 1969).

Also, those who use internet for research and education tend to use more search engines, as there is positive relationship between number of search engines used and research search criteria ($\beta=0.299$, $p<.01$). Education and research are fields in which consumers are highly involved and wish to gather correct facts and gain access to comprehensive information, hence consumers use more search engines to widen the depth and breadth of their knowledge.

The third variable in this category i.e., search for adult content is not significant, which means that consumers who use internet for this purpose, go to websites, which they are aware off and don't really resort to extensive web searches. Although the sign of the estimate is negative (-.094) but it is not significant.

Overall the results suggest that consumers, who are highly involved in searching information like travel or for the purpose of research and education, tend to use more search engines.

3.8   Conclusion

In this chapter, the goal is to explain the behavior of consumers, with different characteristics and goals, towards the choice of number of search engines by examining the issue from the lens of consideration set theory (Howard & Sheth, 1969). The categorization of variables into three different headings is unique with a purpose of enhancing understanding about the category of variables or a combination of categories that explains consumer behavior and choosing the variable set that best explain the behavior. Results make it clear that the combination of *'who'* and *'what'* is the best model fit. *'Who'* is the category that explains the consumer characteristics and in this category only age is significant towards explaining the use number of search engines. Although variables like type of user - rural or urban are good predictors of choice behavior in consumer goods and services

industry (Broadridge & Calderwood, 2002; Sun & Wu, 2004) but in case of predicting the number of search engines this variable did not contribute significantly. There could be various reasons behind this, like low internet accessibility in rural areas, or ignorance among the users about availability and variety of search engines etc., which can be addressed by future research. Another variable that was not significant in explaining the choice behavior was experience, experience is very important in predicting consumer choice. Researchers have found that prior knowledge and experiences put the consumer on sound footing and do affect consumer choice (Edell & Mitchell, 1978; Olson and Muderrisoglu 1979; Park 1976; Russo and Johnson, 1980). But in case of consumers' usage of search engines, experience was not found to be significant, which is surprising, but can be good research question for future.

In the category of what information consumers look for, both research, travel and ticket information seeking behaviors are found to be positively related to the number of search engines used, which echoes the results from past research (Park & Simth, 1989), stating that goals that drive a consumer search tend to make consumer search criteria more comprehensive. The third variable of adult content seeking behavior is not of significance. The reason one can attribute to such a behavior is that in case of research and travel, consumers tend to use search engines as resources and try to find out information from different sources in order to gain

confidence and certainty in their search; but in case of adult content, users don't like to search but visit designated websites, hence the search criteria is not that extensive, this issue can also be taken up in future research.

The third category *why* – that talks about the attitude of consumers towards the search engines was not found to be of significance in explaining consumer choice of number of search engines. The variables chosen like *uncertainty avoidance score* of the consumer's country to measure the reliance on search engine as a group, *usage attitude of consumer towards paid and unpaid placements*, and *attitude towards search engines tracking visitor information* were thought to be strong variables in explaining consumer attitude towards choice of number of search engines, but the results of this research were to the contrary. Even Lee et al., (2004) found support for consumer attitudes towards choice behavior, but in this study these variables are not found to be of a significant contribution. Although the results for this category were surprising but one possible explanation for such a behavior could be that in case of specific websites, attitudes do play a pivotal role but they don't play a role in the determination of consideration set search engines, since a search engine regarding which a consumer holds a negative attitude might not be in the consideration set at all. Regarding the uncertainty avoidance score not having any effect on the choice set, one explanation would be that — this score represents a *group'*s attribute and its effect on the *individua*l consumer's choice is dwarfed by

that of the other two factors i.e., *'who'* and *'what'* as the latter two are much more prominent in the decision-making process of an individual.

3.9   Implications

This study also has a few implications for the managers, based on the results of the study it can be said that the target audience of the search engines is primarily younger crowds as they prefer using more search engines than the older lot. Hence managers can attract the younger lot by introducing more features that would attract younger consumers, by introducing facilities like email, spreadsheets, messaging etc., with the search engine so that consumers find a unique value in a search engine viz a viz others.

Also based on the results of the search criteria, involved searches like travel and educational research reasons are important for more consumers. Search engine companies need to pay heed to the search needs of the consumers and enhance the capability of the search engine in the fields of travel and educational search. Since these areas of search motivate consumers to use more search engines, hence search engines need equip themselves to provide robust search results to consumers by increasing the depth and width of search results.

IV ONLINE PURCHASE BEHAVIOR of MOBILE-ONLY-INTERNET-USERS
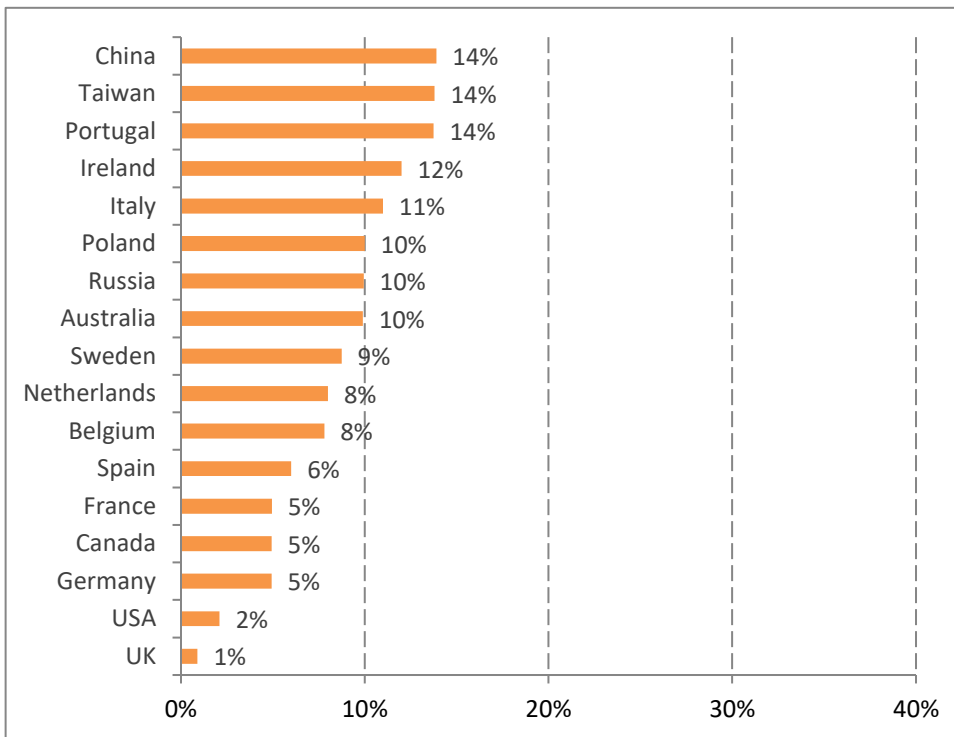
4.1 Introduction

Mobile marketing can be seen as the evolution of Internet-based marketing (e-commerce scenario) moved to the mobile channel, in order to respond to the emerging trend of consumers losing interest in traditional marketing channels (Hinz, Skiera, Barrot, & Becker, 2011)[6].

In last few years, there has been an exponential rise in the use of mobile devices for internet access. Now it's much easier to do electronic transactions using mobile devices, Personal Digital Assistant (PDA) and tablet computers that allow wireless transactions from any location with internet connectivity. As a result, mobile commerce has grown as a separate channel from $70.7 billion in 2007 to $187.9 billion in 2012 (Uglow, 2007). This growth is easily reflected in millions of consumers who appear glued to mobile screens at coffee shops, train stations and airport gates. The big uncertainty is regarding the size and characteristics of the target mobile consumer market. The increasing potential of mobile commerce is supported by various statistics. For instance, among smart phone users, 29% report using it for shopping/retail purposes (Nielsen, 2010). Popular transaction-related activities of smart phone users include locating nearby stores (50%), comparing

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[6] Hinz, O., Skiera, B., Barrot, C., & Becker, J. U. (2011). Seeding strategies for viral marketing: an empirical comparison. Journal of Marketing, 75, 55e71

prices (38%), accessing deal of the day app (29%) and using a mobile app to share product recommendations (20%). These statistics indicate that wireless connections can boost both consumer usage and revenues. Some studies suggest that users are not as mobile; instead, they shop online using desktops or laptops connected to Internet via reliable networks only. Research by Yahoo, Insightexpress and Performics indicate that a large portion of internet search happens when users are at home, on evenings and weekends (Sterling, 2011).

Figure 5 - Mobile-Only Audience By Country
% of internet users aged 16 – 64 who are Mobile-Only

Country	%
UAE	38%
Thailand	35%
Malaysia	34%
Saudi Arabia	34%
Philippines	29%
India	27%
Indonesia	26%
Vietnam	24%
South Korea	23%
Brazil	23%
Turkey	20%
Singapore	19%
South Africa	19%
Argentina	19%
Mexico	16%
Hong Kong	15%
Japan	14%

Country	%
China	14%
Taiwan	14%
Portugal	14%
Ireland	12%
Italy	11%
Poland	10%
Russia	10%
Australia	10%
Sweden	9%
Netherlands	8%
Belgium	8%
Spain	6%
France	5%
Canada	5%
Germany	5%
USA	2%
UK	1%

Mobile-only Users are defined as those who own a amartphone/feature phone, and/or used a smartphone/feature phone to go onine in the last month. They do not own any other connected devices and have not used any connected devices to get online within last month

*(Source: www.globalwebindex.net)*

80

In this chapter, the goal is to study the patterns of online buying behavior of Mobile-Only-Internet-Users (MOIU) across cultures — using two of the Hofstede's cultural dimensions along with income per capita (IPC) as independent variables.

Until now, research on internet shopping implied accessing the internet via desktop computers. In the desktop-only era, it was reasonable enough to believe that the ways in which people shopped online or reacted to advertisements could be attributed to their demographics, goals and attitudes. In the early days of desktop shopping, for instance, navigational difficulties increased consumer reluctance to engage in online shopping (Jarvenpaa and Todd, 1996/1997) even though consumers recognized internet shopping to be time saving (Alreck and Settle, 2002). Interest in online shopping was higher among men than women (Meuter et al., 2003) perhaps because women found online shopping to be riskier than men (Garbarino and Strahilevitz, 2004). As online shopping became more popular, women expressed more of a 'shopping as fun' orientation while men were more likely to be 'quick' shoppers (Hansen and Jensen, 2009).

With the emergence of mobile internet, access to the desktop computer becomes less relevant and the physical context becomes more consequential. According to survey reports by INMOBI (Figure 1, Table 1), Asian and African nations demonstrate more situated mobile web usage, where mobile web is mostly used while in bed, watching TV or while waiting for something. However, UK and

USA users demonstrate ubiquitous use, where frequent usage occurs also while spending time with family, commuting, shopping, as well as in social gatherings. USA and UK also demonstrate higher percent of shopping related usage as well as higher number of minutes used on mobile devices. It becomes important, therefore, to understand how the physical context affects consumer engagement with the electronic market space, once ownership and access can be taken for granted.

Figure 6 - Percent of mobile web users by country that use the mobile on various occasions
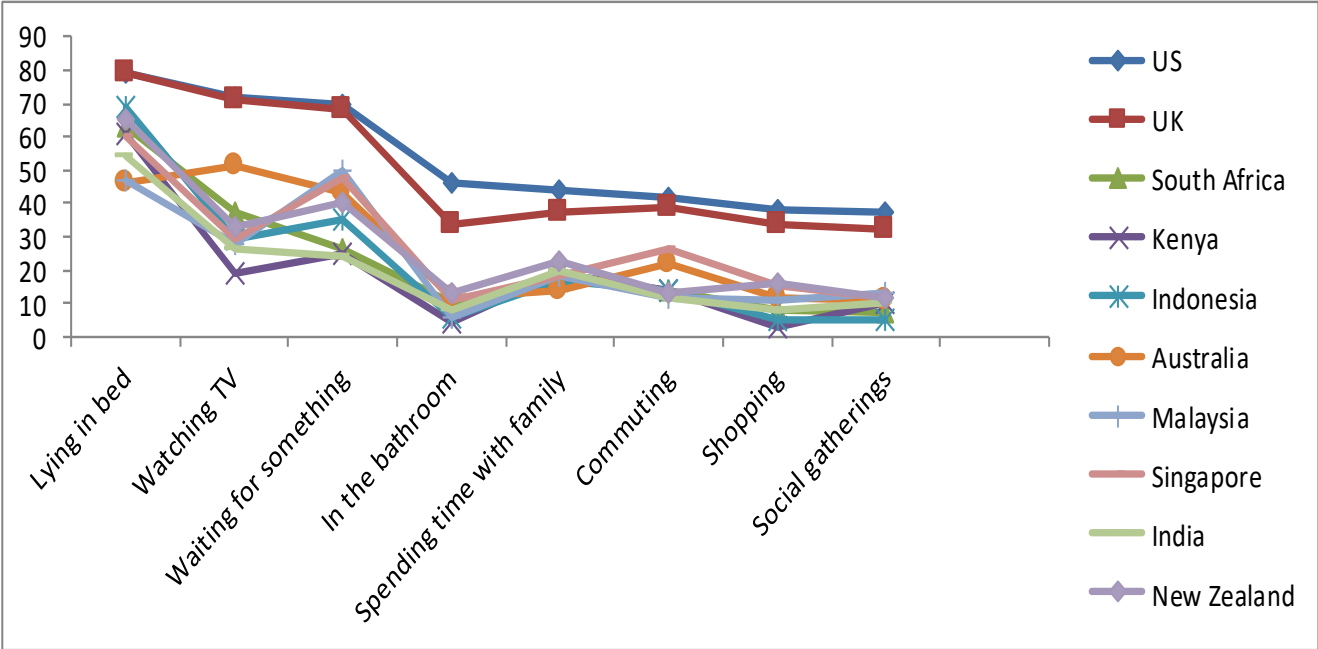
Source: INMOBI

Table 18: Percent of mobile web users by country that use the mobile in various occasions

Usage context	US	UK	South Africa	Kenya	Indonesia	Australia	Malaysia	Singapore	India	New Zealand
Lying in bed	79	79	63	61	69	46	47	60	54	65
Watching TV	72	71	37	19	29	51	28	29	26	33
Waiting for something	70	68	26	25	35	43	50	48	24	40
In the bathroom	46	34	10	4	6	12	6	11	8	13
Spending time with family	44	37	18	19	17	14	18	18	20	23
Commuting	42	39	14	14	14	22	12	26	12	13
Shopping	38	34	8	3	5	12	11	15	8	16
Social gatherings	37	32	7	10	5	11	13	12	10	12

4.2   Physical-social Context Cues and their Influences

The increased ownership of mobile devices has led to many location-based mobile applications such as Four Square, Gypsii, Buzzd, Brightkite, Whrrl and Gowalla. Even conventional marketers such as HSN.com, for instance, has a full series of mobile applications for the iPhone™ and iPod touch® which allows the consumer to shop. In fact, these technologies change both the way consumers access and consume information, and the way in which firms and organizations reach clients and deliver their services (Demirkan & Spohrer, 2014; Gao, Rohm, Sultan, & Pagani, 2013).

4.3   Effect of UAI, IDV on Online Purchase through Mobile Devices

According to some studies, public Wi-Fi and 4G internet connections are less secure than the VPN (Virtual Private Network)[7]. When it comes to public Wi-Fi, there are more opportunities for attackers to exploit vulnerabilities via connection over Wi-Fi than over 4G. As far as the security of these connections, here's how they rank from most secure to least secure:

1. Using a VPN over a cellular network or using a VPN over Wi-Fi

2. Cellular only

3. Wi-Fi only

Therefore, based on the insights from the literature review and the findings of chapter 2— regarding online purchase behavior using various Hofstede's cultural dimensions —the following hypotheses are proposed and tests are conducted:

H9: Countries with higher UAI and higher IDV scores will have lower MOIU percentage.

H10: Young users (15 – 29 years of age) across countries are more likely to be MOIU but more so in countries with high IDV scores.

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[7] https://community.norton.com/en/blogs/norton-protection-blog/how-safe-surfing-4g-vs-wi-fi

The MOIU numbers (as a percentage of total online buyers) and the Hofstede's

IDV and UAI scores for 34 countries are used to test these hypotheses. The MOIU

data are collected from https://www.globalwebindex.net/.

Table 19: Sample data for MOIU, IDV, GDP_Per-capita, UAI, Young Population

Country	MOIU	IDV	GDP_pcap	UAI	Young Population %
Argentina	18.5	46	19934.37	86	23.56455
Australia	9.9	90	46789.93	51	20.6189
Belgium	7.8	75	46383.24	94	18.08683
Brazil	22.56	38	15127.81	76	25.29881
Canada	4.94	80	44025.18	48	19.64363
China	13.9	20	15534.7	40	22.32186
France	4.95	71	41466.27	86	17.71794

4.4   Hypotheses Tests and Results

Using MOIU percentage as dependent variable and UAI, IDV scores and GDP Per-

capita as independent variables, the linear regression is conducted to test H9.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Significance Pr > |t|
		B	Std. Error	Beta		
1	(Constant)	34.38368	4.92775	0	6.98	<.0001
	UAI	-0.05307	0.05266	-0.13207	-1.01	0.3217
	IDV	-0.26763	0.05430	-0.65700	-4.93	<.0001
	GDP_pcap	-0.00006755	0.00006659	-0.13681	-1.01	0.3185
Table 20 – Result of H9 (Dependent Variable: MOIU percentage in a country)						

We see that the MOIU numbers are negatively correlated with IDV scores. This can be attributed to the trend that users of individualistic societies are more concerned about their data privacy as against those of collectivist societies. Another explanation would be that the more individualistic nations have better infrastructure, the users have more opportunities to use other devices like iPad and laptop to access the Internet. So, they are less likely to be mobile only. Uncertainty Avoidance and GDP per-capita have no significant effects.

H10: Young users (15 – 29 years of age) across countries are more likely to be MOIUs.

We first regress the percentage of MOIU against YP (the percentage of young population aged between 15 – 29 years) and GDP_pcap (GDP per-capita) The results are below:

Model		Unstandardized Coefficients		Standardized Coefficients		Significance
		B	Std. Error	Beta	T	Pr > |t|
1	(Constant)	-17.68414	9.32900	0	-1.90	0.0674
	yp	1.56271	0.35819	0.68515	4.36	0.0001
	GDP_pcap	0.00003429	0.00007754	0.06944	0.44	0.6614

Table 21 - Result of H10a (Dependent Variable: MOIU percentage in a country)

We find that the Generation-Z users are more likely to be Mobile-Only-Internet-Users across countries and GDP per-capita has no effect on the same.

Next, we regress MOIU against YP, IDV and GDP_pcap to check the moderating effect of IDV on MOIU in combination with YP:

Model		Unstandardized Coefficients		Standardized Coefficients	T	Significance Pr > |t|
		B	Std. Error	Beta		
1	(Constant)	-2.70092	7.30363	0	-0.37	0.7141
	IDV	-0.22732	0.04213	-0.55806	-5.40	<.0001
	yp	1.28409	0.26446	0.56299	4.86	<.0001
	GDP_pcap	0.00007005	0.00005654	0.14188	1.24	0.2249
Table 22 – Result of H10b (Dependent Variable: MOIU percentage in a country)						

As expected the young users aged between 15 – 25 years are all the more likely to be MOIU in collective societies. Higher IDV is still having a negative correlation with MOIU numbers.

V   Conclusion, Limitations and Future Research Direction

In this research study, the effects of the Hofstede's cultural dimensions along with demographic variables have been explored on the online buying behavior of consumers from different countries.

Cultures high on individualism are harder to penetrate. The findings of this study are in accordance with expectations. The primary factors affecting the internet penetration rate in different countries are looked into too. This gives an important perspective of the key foundation of the e-commerce industry i.e., access to Internet to the populace — which forms the superset of potential buyers. Internet penetration is positively correlated with high education level and high per-capita income of the countries. The level of landline phone penetration doesn't affect the internet penetration.

In chapter 2, the results support the hypothesis that credit card penetration does have a positive effect on e-commerce adoption even in the countries where cash-on-delivery option is available. Uncertainty avoidance significantly affect the search time as hypothesized and consumers from collectivist cultures are more likely to arrive at e-commerce website through social media website. In the future studies, it could be explored how search time is related with uncertainty avoidance combined with the other contextual factors.

We find that users from countries low on IDV are more likely to write post-purchase online reviews. Therefore, it is important to examine the cultural dimensions and customers' attitudes for online shopping for e-commerce players

It could also be explored how two culturally dissimilar countries differ on consumers' buying intention as well as search time on e-commerce websites by doing moderated regression analysis in addition to simple regression analysis with income, education level, social influence, attitude, and behavioral control as independent variables. Consumers do not have complete control over their online transactions, and therefore perceived behavioral control described in the theory of planned behavior (TPB) (Ajzen 1985, 1988, 1991) and trust have become critical factors in e-commerce (Pavlou, 2002). According to TPB, attitude and subjective norm could also be incorporated as key predictors of online behavior. (Pavlou, Chai 2002).

In chapter 3, we find that demographic variables are poor predictors of the behavior of choice of number of search engines except age, attitudinal characteristics also don't contribute significantly towards explaining the choice behavior but information search parameters are significant in explaining consumer choice towards web search engines.

Future research should try to enhance the predictive power of the proposed model as to how the consumers from collectivist countries maneuver from social networking websites to shopping websites by taking into consideration the interaction effects of additional cultural dimensions. Additionally, the issue of small sample size could be alleviated in future studies to avoid the negative effects on the study pertaining to the same.

In chapter 4, we find that per capita income on a PPP (Purchasing Power Parity) basis doesn't have any effect on the percentage of MOIU across the globe. This can be attributed to the fact that broadband and Wi-Fi infrastructure are still not available for the majority of the users, particularly in small towns—which in turn means they can't access the Internet on desktops and MOIU becomes a viable option.

The roles of uncertainty avoidance and the demographic variables are identified in online purchase behavior of mobile-only-internet-users (MOIU) vs. desktop-internet users. It is found that the countries with high IDV scores have lower percentage of MOIU and UAI has no effect irrespective of the fact that internet access with mobile devices offers less data privacy. The more individualistic nations have better infrastructure, they have more opportunities to use other mobile devices like iPad and laptop to access the Internet. So, they are less likely to be mobile only.

In addition to that, it is found that the effect of IDV scores and the age of users— on MOIU number—are significant too. Also, the young users, aged between 25 – 35 years, are much more likely to fall into the MOIU category, irrespective of which country they are from.

The continuous developments in technology is expected to keep changing the current mobile landscape, as functions included in mobile apps provide better experiences for users across cultures. There has been some research done about ubiquitous vs. situated browsing patterns of MOIU users segmented into various clusters based on demographic variables. (Banerjee, Dholakia, 2013). However, the cross-cultural patterns about the same is still unexplored and future research will involve finding the patterns of situated vs. ubiquitous online buying behavior across cultures.

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