The Effects of National Culture Values on Consumer Acceptance of E-commerce: The Swedish Case

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Abstract
A large amount of research has been conducted in order to seek explanations that clarify e-commerce acceptance throughout the world; however, there is a gap in the research as to how e-commerce acceptance is attributable to national culture. Two previous studies (Yoon, 2009), (Capece, et al., 2013) used Hofstede’s five dimensions of national culture in conjunction with the Technology Acceptance Model (TAM) as a means to filling this gap with perspectives on low-acceptance populations (China in 2008 and Italy in 2013). The study presented in this paper is a continuation of the previous work, offering a perspective on a high-acceptance population (Sweden).

The main research question is about investigating how Swedish e-commerce acceptance is related to national culture, and the answer is sought by probing on the Swedish perspective of e-commerce in the light of the TAM, e-commerce trust, and Hofstede’s five dimensions of national culture in an online survey. The data is analyzed using Structural Equation Modeling (SEM), and compared to the findings of the Chinese and Italian precursors. Furthermore, an attempt is made to explain the contrast between the comparably high e-commerce acceptance in Sweden to the lower degrees of acceptance in China and Italy.

Key-words
E-commerce, National Culture, E-commerce penetration, E-commerce acceptance, Sweden, TAM, Technology Acceptance Model, Hofstede’s dimensions of national culture, Trust, SEM, PLS-Graph
Acknowledgements

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Finally, I would like to thank Muriel and Claes Henning, my mother and my father, and all the people that shared personal information, thoughts, and opinions by completing the survey and by otherwise helping me along the road.

Thank You,

Arvid
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<table>
<thead>
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<th>Explanation</th>
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<tr>
<td>PDI</td>
<td>Hofstede’s Power Distance Index</td>
</tr>
<tr>
<td>IDV</td>
<td>Hofstede’s Individualism Index</td>
</tr>
<tr>
<td>MAS</td>
<td>Hofstede’s masculinity index</td>
</tr>
<tr>
<td>UAI</td>
<td>Hofstede’s Uncertainty Avoidance Index</td>
</tr>
<tr>
<td>LTO</td>
<td>Hofstede’s Long-Term Orientation Index</td>
</tr>
<tr>
<td>TAM</td>
<td>Technology Acceptance Model</td>
</tr>
<tr>
<td>PU</td>
<td>Perceived Usefulness factor in TAM</td>
</tr>
<tr>
<td>PEOU</td>
<td>Perceived Ease Of Use factor in TAM</td>
</tr>
<tr>
<td>IUSE</td>
<td>Intention to Use factor in TAM</td>
</tr>
<tr>
<td>AVE</td>
<td>Average Variance Extracted</td>
</tr>
<tr>
<td>IS</td>
<td>Information System</td>
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1 Introduction

1.1 Overview of the area

Across the world, B2C E-commerce has been growing steadily and has thereby become an increasingly important factor in the retail industry.

In 2004, the Eurostat survey found that only 20% of the individuals in the EU27 had completed an online purchase during the last 12 months, whereas in 2011, 43% of its citizens had done so. The trend of increasing e-commerce acceptance is approaching the goal of 50% by year 2015; however there are significant differences between countries, with Romania, Bulgaria and Italy lagging behind with 6%, 7% and 15% respectively when compared with Norway, UK and Sweden each with over 70% e-commerce penetration (European Commission, 2013, p. 95) – a difference that, to some extent, could be explained by cultural differences between the countries.

1.2 Background

Through the Internet, consumers have access to unprecedented amounts of information, allowing them to make better decisions during the purchasing process when they can research price, availability, delivery options, quality of the products and quality of merchants’ services. They can, and do, also discuss their purchases with peers before and after the actual transaction has been made. But e-commerce shoppers behave differently in different parts of Europe and, obviously, throughout the world. Apart from differences in infrastructure (e.g. access to broadband Internet connection and well-functioning delivery networks), having an impact on delivery options, time- and cost-efficiency, and thereby implications on basic requirements such as trust and convenience, there are suggestions that national culture influences shoppers’ behaviors.

It can be observed that different markets display different behavior on part of the merchants as well, whereas the Chinese e-commerce market is largely organized around ‘online market places’ such as Tmall and 360Buy, with built-in quality control that allows the customers to rate the merchants they buy from, the American and European markets are more oriented towards merchants running individual e-commerce web sites.
1.2.1 The Swedish case

Swedish online sales are estimated to have on average an increase by more than 20% annually since 2008, snowballing from € 3.2 billion in 2008 to € 6.78 billion in 2012 (Soriano, et al., 2012). According to another source, Swedish e-commerce sales has continued to grow by 7% year on year, from SEK 70.5 billion in 2012 to SEK 81 billion in 2014 (DIBS, 2014). But even though the trend with increasing volumes of e-commerce is valid in other EU countries (European Commission: Eurostat, 2013), the adoption of this shopping channel is slower with only half of the overall population of the EU27 countries being predicted to having completed an e-commerce purchase during 2015 (Eurostat, 2012).

Initially, consumers were hesitant to shop online for private purposes, however with increased security in payment and delivery solutions along with a maturing market and merchants who are taking the trust issues seriously, Swedish consumers have become more and more trusting with shopping online. And with increasing numbers of potential shoppers, new opportunities for companies to build profitable e-commerce businesses arise.

One may wonder why e-commerce was adopted so quickly in Sweden, compared to other countries. One aspect of the phenomenon could be that there is a strong tradition of catalog sales, with some of the world’s most successful companies, such as H&M and IKEA having emerged from distance sales companies, as champions for the industry. Another factor behind this may be world-leading accessibility to broadband Internet connections, and yet another factor may be a well-developed and relatively reliable postal network in conjunction with vast distances between stores and consumers. When shopping for durable goods and clothing, catalog shopping was significantly easier than visiting a store for the large number of Swedes living in rural areas, and might have been the only option of obtaining desired items without having to travel hundreds of kilometers. On the other hand, some aspects of Swedish national heritance, with a strong tradition in innovation and creativity in solving everyday concerns, acceptance of new innovation, widespread broadband accessibility, and inherent trust in ones neighbors could also be factors that have major impact on e-commerce diffusion. This paper seeks to find out if the culture, from a perspective of Hofstede’s dimensions, is the case.
1.2.2 Previous work
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.

This thesis sets out to replicate these studies in Sweden, in order to find out if the Swedish culture is contributing to e-commerce acceptance, and compares the Swedish results with the Italian and the Chinese findings.

1.3 Research question
The aim of this thesis is to replicate the aforementioned studies on a) Chinese and b) Italian national cultures’ impact on the acceptance of e-commerce. Specifically it attempts to answer the question

*(How) is Swedish e-commerce acceptance (as explained by the TAM) related to national culture, measured in Hofstede’s five dimensions?*

The answer is sought by examining the Swedish perspective on general use of e-commerce in the light of the TAM (Davies, 1989), (Davis, et al., 1989), the factor of trust (Gefen, et al., 2003), and Hofstede’s five dimensions measuring national culture (Hofstede & Hofstede, 2005). The findings are then compared to the findings of the Chinese and the Italian precursors, and an attempt is made to explain the contrast between the comparably high e-commerce acceptance in Sweden to the lower degrees in China and specifically Italy.

The question of cultural differences is also interesting in the light 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.

1.4 Purpose
The purpose of this master thesis is to map Swedish e-commerce customers by Hofstede’s five dimensions in conjunction with their views on e-commerce acceptance (as explained by
the TAM), in order to draw conclusions from the results of the survey in terms of national culture as a factor in the widespread acceptance of e-commerce the country.

This is a follow up study, based on previous research performed in China and Italy, in order provide further data on the role and impact that national cultures have on consumers’ e-commerce acceptance. As such, the main contribution of this study will be to increase the coverage of the map initiated by the authors of the previous studies. As this contribution covers a geographical region considered to be world leader in terms of e-commerce acceptance, it is an important contribution despite the comparably small volume of Internet users, (and thus ditto market potential for practitioners) of the region.

1.5 Scope/delimitation

The scope of this master thesis is limited to the Swedish B2C Internet based e-commerce environment. Being the largest in Scandinavia, conclusions drawn from this research might be relevant to other parts of the region, but it should be noted that differences in national culture between the Scandinavian countries might have implications on consumer e-commerce behavior, even though e-commerce acceptance is among the highest in the world for all the nations in the area. Despite the results of the survey being compared with Italian and Chinese results, this thesis will only briefly cover those regions, as they are described in their respective work.
2 Theoretical Frameworks

2.1 What is e-commerce?

E-commerce can be defined 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.” (European Commission: Eurostat, 2013) It can further be classified by the roles of the actors taking part in the transaction, such as businesses and consumers – allowing us to divide e-commerce into business to business (b2b, e.g. Alibaba), business to consumer (b2c, e.g. Amazon) and consumer to consumer (c2c e.g. Ebay).

<table>
<thead>
<tr>
<th>Buyer</th>
<th>Seller</th>
<th>Class</th>
<th>Example</th>
</tr>
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<tbody>
<tr>
<td>Business</td>
<td>Business</td>
<td>B2B</td>
<td>Alibaba</td>
</tr>
<tr>
<td>Business</td>
<td>Consumer</td>
<td>B2C</td>
<td>Amazon</td>
</tr>
<tr>
<td>Consumer</td>
<td>Business</td>
<td>C2B</td>
<td>E.ON</td>
</tr>
<tr>
<td>Consumer</td>
<td>Consumer</td>
<td>C2C</td>
<td>Ebay</td>
</tr>
</tbody>
</table>

Table 1 E-commerce classes

Throughout this paper, the focus will be on e-commerce sales through web sites on the Internet, where the buying is an individual and the seller (or merchant) is a company or business.

2.1.1 Consequences of e-commerce on sustainability

As e-commerce is adopted globally, social, economic and environmental interactions emerge, caused by production and consumption of the goods and services that are traded as well as by e-commerce as an industry in and out of itself. 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). At the same time, e-commerce is re-shaping the retail landscape in rural economies in developed countries, exposing merchants to large-scale (if not global) 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 (global marketplace with gross merchandise sales of almost $US 2 billion in 2014 (Etsy, u.d.)) 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. From an environmental perspective, however, 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 Sweden to travel to Italy, or even 100 km to the nearest Italian deli, to purchase white truffles, now, with the convenience brought by e-commerce, the truffles are just an arm’s length and a few clicks away. The social, economic and environmental sustainability aspects of e-commerce are complex to say the least, and deserve to be analyzed in depth and detail in separate works.

2.1.2 Acceptance of e-commerce

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

Beatty et al (Beatty, et al., 2011) performed a comprehensive meta-study with primary focus on consumer trust in e-commerce, and in doing so they also 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 the rawest 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.
### Table 2 E-commerce acceptance; Antecedents and Consequences

(Beatty, et al., 2011)

#### 2.2 Motivations for shopping online

The main reasons for Swedes to shop online are convenience, price and product selection. (Dibs, 2013) Shoppers appreciate the advantages of e-commerce over offline retail by being able to shop anytime and anywhere, choose from a broader selection of products, and of being given access to product selections previously not offered in the vicinity of where they happen to be 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 Sweden, 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), (DIIBS, 2014). Sweden being a country with a significant part of the population in rural areas that lack the shopping options of bigger cities 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
Because e-commerce merchants are not depending on shelf space when determining what products to market in their shops, and in fact do not even have to keep all products in their own stock but can instead 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.

2.3 Trust and risk
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 exchange 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).
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 artefact is easy to use, and Perceived Usefulness is the users’ belief that an artefact 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 Hofstede’s five dimensions of national 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.

2.5.1 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.

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

Table 3 Selected key differences between small and large power distance societies

(Hofstede & Hofstede, 2005)

2.5.2 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).

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

Table 4: 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.

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.
2.5.3 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 5 Selected key differences between Feminine and Masculine societies

(Hofstede & Hofstede, 2005)

2.5.4 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 6 Selected key differences between weak and strong uncertainty avoidance societies

(Hofstede & Hofstede, 2005)

2.5.5 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, but also respecting social statuses such as showing respect to superiors and elders. 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)

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

Table 7 Selected key differences between Short-term and long-term orientation societies

(Hofstede & Hofstede, 2005)

Others have also connected the values of long-term orientation with successful problem solving. In an American study, Success in solving hard (math) problems was attributed to the cultural trait of perseverance (Gladwell, 2011).
As seen above, a number of the characteristics of Long-term orientation societies imply willingness to work to gain knowledge and adopt new technology, as well as saving money (thrift), so from a Hofstede perspective, one could assume that increasing LTO would boost perceived usefulness.

### 2.6 Research hypotheses and model

The research model (below) consists of elements from the TAM (Davies, 1989), (Davis, et al., 1989) Trust and TAM (Gefen, et al., 2003) in blue boxes, and Hofstede’s five dimensions of national culture (Hofstede & Hofstede, 2005) in red circles. Yoon hypothesized that the Hofstede dimensions would have moderating effects on the Trust – TAM relationships and used SEM to evaluate his hypotheses on a group of Chinese students.

![Figure 2 The research model (Yoon, 2009)](image)

#### 2.6.1 TAM and Trust

The TAM and Trust elements are based on hypotheses from previous research performed by Davis (Davies, 1989), Davis et al (Davis, et al., 1989) that proposed the TAM, and Gefen et al. (Gefen, et al., 2003) who hypothesized and empirically validated that Trust is an important antecedent, just as the IUSE antecedents of the TAM (Perceived Ease of Use and Perceived Usefulness), in retaining existing customers for e-commerce businesses. That trust has positive effect on intention to use was also empirically validated by Yoon (Yoon, 2009), as
Hypotheses H1 – H6 are thoroughly discussed in previous research presented above.

**H1 - Perceived Usefulness has a positive impact on Intention to Use e-commerce**
Users who perceive e-commerce to be useful are more inclined to express intention to use e-commerce than users who do not perceive e-commerce to be useful.

**H2 - Perceived Ease of Use has a positive impact on Intention to Use**
Users who perceive e-commerce to be easy to use are more inclined to express intention to use e-commerce than users who do not perceive e-commerce to be easy to use.

**H3 – Perceived Ease of Use has a positive impact on Perceived Usefulness.**
Users who perceive e-commerce to be easy to use perceive it to be more useful than users who do not perceive e-commerce to be easy to use.

**H4 – Perceived Ease of Use has a positive impact on Trust**
Users who perceive e-commerce to be easy to use perceive it to be more trustworthy than users who do not perceive e-commerce to be easy to use.

**H5 – Trust has a positive impact on Intention to Use**
Users who trust e-commerce are more likely to express intention to use e-commerce than users who do not trust e-commerce.

**H6 – Trust has a positive impact on Perceived Usefulness**
Users who trust e-commerce perceive it as being more useful than users who do not trust e-commerce.

### 2.6.2 Impact of Hofstede's cultural dimensions on TAM-antecedents of IUSe and Trust

In an effort to explain how national culture can affect the behavior of e-commerce customers, Yoon added Hofstede’s five dimensions of national culture (PDI, IDV, MAS, UAI, and LTO) to the integrated model of Trust and TAM, and arrived at his research model, in which the interaction effects of the cultural dimensions with the IUSe-antecedents of the Trust-TAM model (Gefen, et al., 2003) were measured. This would lead to a model with the ability to explain moderating effects of the Hofstede dimensions on the Intention to use (IUSe)-antecedents effect on IUSe. The hypotheses are outlined below, and the cultural...
dimensions according to Hofstede are explained in more detail in the section above (2.5 Hofstede’s five dimensions of national culture).

**H7 – The higher the degree of Power Distance, the lower the effect of Trust on Intention to use e-commerce.**

Low PDI could be seen as an indicator of high baseline trust – people in low PDI societies are used to trust in each other, more than relying on authority, when taking decisions. The more (baseline) trust, and the more common it is for the individuals in the society to expose themselves to risk of betrayal, the higher the impact of Trust on intention to use.

**H8 – The higher the degree of individualism (IDV), the higher the effect of trust on intention to use e-commerce.**

Conversely to the effect of PDI, high IDV should strengthen the effect of trust on IUSE. In high-individuality societies, people are less sensitive to in-group/out-group boundaries and are more used to choose to trust or not to trust other parties, based on other factors. Thus, people of individualist societies should be more inclined to place trust in e-commerce than collectivist societies.

**H9 – The higher the degree of Masculinity (MAS), the higher the effect of perceived usefulness on intention to use e-commerce.**

High-masculinity societies, of which a strong identifying factor is the prioritization of task orientation over human relations, should be more inclined to use e-commerce (in cases where e-commerce is really more effective than in-store shopping) than in low-masculinity societies. Thus, the effect of perceived usefulness should be stronger in high-masculinity societies than in low-masculinity societies.

**H10 – The higher the degree of Masculinity (MAS), the lower the effect of perceived ease of use on intention to use e-commerce.**

From the opposite perspective of masculinity on perceived usefulness, Yoon is placing the effect of masculinity on ease of use: effort-free, less frustrating, and even pleasant use of an IS would rhyme well with low-masculinity values such as quality of life. Thus, Perceived ease of use would have stronger effect on intention to use in low-masculinity societies.
**H11 – The higher the degree of uncertainty avoidance (UAI), the lower the effects of trust on intention to use e-commerce.**

Uncertainty and trust are closely related by definition; as previously stated, holding trust simplifies uncertain situations, and allows individuals to expose themselves to risk while being in good faith that the risks will not materialize.

**H12 – The higher the degree of uncertainty avoidance (UAI), the lower the effect of perceived usefulness on intention to use e-commerce.**

More generally than the relation between uncertainty and trust, high-UAI societies can be said to be more open to changes and innovation than low-UAI societies, and in influencing IT adoption in particular (Yoon, 2009). The relation between perceived usefulness and trust/risk has also been identified in other research, where respondents’ attitudes towards a technology were measured before and after information about the risks or benefits with the technology (Kahneman, 2011). Thus it falls logically that lower UAI would increase the effect of Perceived Usefulness.

**H13 – The higher degree of long-term orientation (LTO), the higher the effects of trust on intention to use e-commerce.**

High LTO societies have a tradition of prioritizing future rewards over immediate gratifications. Since future rewards have inherent insecurity in terms of not yet being materialized, individuals from high LTO societies have a tradition in trusting in the future. Furthermore, in high-LTO societies, the perceived risk of an individual betraying another, motivated by short-sighted gains, is lower, because of the negative long-term consequences for the betrayer.
3 Methodology

The analysis in this thesis builds upon data from an online survey, as well as a literature study. In-depth interviews with market leading e-commerce merchants and conversion experts with different geographical target markets was considered, but discarded because it was deemed unnecessary to provide data for the study. However, in-depth interviews could be considered for future research on the subject, in order to better understand the market dynamics observed in different regions, by taking the merchants’ and consumers’ perspectives.

3.1 Literature Study

The literature included in the study is mainly from journals, but also includes reports from governmental bodies such as Eurostat and reports from for-profit organizations such as Morgan Stanley, Accenture and Dibs, who have strong economic interests in the industry.

An initial literature study, with focus on e-commerce, e-commerce acceptance and trust provided material for an overview of the field and laid the foundation for the scope of this thesis. By searching through Google, KTH Primo (the KTH Library search engine), and leading management consultancy firms’ web sites, a number of academic and non-academic sources were found and scanned.

It is apparent that a significant amount of research has already been done in the field of e-commerce acceptance, and that there is a large number of publications to read and take inspiration from – the main theme of them being that trust and technology acceptance is a strong antecedent to e-commerce. However, the scope of national culture had not yet been fully explored. The precursors to this report provided interesting aspects of the effects of national culture on e-commerce acceptance in low acceptance regions, and provided the framework that this thesis is based on. Books on human reasoning and decision theory were also studied.

3.2 Survey

The online survey was performed using SurveyMonkey, which is a standard tool for online surveys. SurveyMonkey was chosen because it is a standard tool for performing the kind of survey in question, and because it ranked highest of the organic search results of a Google search of “online survey”. Just as in the precursors, a 7-level Likert Scale ranging from 1.
(Strongly disagree) to 7 (Strongly agree) was used to record the respondents’ answers. The answers were labeled according to best practices for using Likert scales recommended by SurveyMonkey (SurveyMonkey, u.d.). In line with the Italian precursor (Capece, et al., 2013), a social network web site was used to share the link to the survey. In the case of this survey, both the author’s personal page and private messages to “friends” of the author, asking the recipients to fill out the survey as well as sharing the link to it, were utilized to gain respondents. In the first precursor (Yoon, 2009), university students from China were recruited as respondents, resulting in a focused respondent group, and in the Italian precursor a social media web site was used to find the respondents (Capece, et al., 2013), and the consequence of this was again a focused group of respondents, despite efforts to keep the respondent group heterogeneous by cherry-picking respondents: the lions share was university students in their twenties, living in a major city.

3.2.1 Purpose
The purpose of the online survey was to record the connection between individuals’ ranking on Hofstede’s five dimensions and their e-commerce opinions and habits, in accordance with previous research. This was complicated by the previous studies having been performed in languages other than English; it was deemed unlikely that the original study in a Chinese context had been performed in the English language, and it was confirmed with the first author of the Italian study, that the Italian study was performed in Italian (Crisciotti, 2012). This survey was performed in Swedish in order to put the interpretative prerogative with the author and reduce the risk of misconception on the respondents’ side.

3.2.2 Respondents
It is evident that the respondents belong to a focused group of academics in their late 20’s to early 30’s, with long and frequent e-commerce experience, and with a vast majority having more than 15 years of Internet experience. This naturally has impacted the result of the survey, but the result is nevertheless interesting; in a best case scenario, this is a look into the future for markets less mature than the Swedish. The age and education profile of the Swedish respondent group is similar to the Chinese and the Italian respondent groups.
### Table 8 Descriptive statistics of the respondents

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>81</td>
<td>53.1</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>119</td>
<td>36.2</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>24</td>
<td>10.7</td>
</tr>
<tr>
<td>Education</td>
<td>Gymnasium/college</td>
<td>38</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>University/higher</td>
<td>160</td>
<td>71%</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>26</td>
<td>12%</td>
</tr>
<tr>
<td>Age</td>
<td>19 - 28</td>
<td>50</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>29 - 32</td>
<td>60</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>33 - 36</td>
<td>44</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>&gt;36</td>
<td>43</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>27</td>
<td>12%</td>
</tr>
<tr>
<td>E-commerce experience</td>
<td>None</td>
<td>6</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>1 - 6 years</td>
<td>16</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>7 - 10 years</td>
<td>72</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>&gt; 10 years</td>
<td>104</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>26</td>
<td>12%</td>
</tr>
<tr>
<td>Purchases last 12 months</td>
<td>None</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>1-7 purchases</td>
<td>51</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>8-12 purchases</td>
<td>54</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>13-20 purchases</td>
<td>43</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>&gt;20 purchases</td>
<td>48</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>27</td>
<td>12%</td>
</tr>
<tr>
<td>Internet Experience</td>
<td>5 - 14 years</td>
<td>43</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>15 - 16 years</td>
<td>59</td>
<td>26%</td>
</tr>
<tr>
<td></td>
<td>17 - 19 years</td>
<td>43</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>&gt;19 years</td>
<td>54</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>25</td>
<td>11%</td>
</tr>
</tbody>
</table>

### 3.2.3 Survey questions

In order to create the best possible circumstances for repeating the study, four sources were used to build and validate the set of survey questions for this Swedish version: The original article in English, (Yoon, 2009), the Italian article, (Capece, et al., 2013), (partly translated from Italian to English using Google Translate due to this authors personal lack of proficiency in Italian), the Gefen et al article investigating Trust and TAM in online shopping (Gefen, et al., 2003), and one of Hofstedes’ later works (Hofstede & Hofstede, 2005), with the original
study as the main source. The survey questions are outlined in English in Appendix A: Survey questionnaire – English translation from Swedish.

Two variants of the survey questions were considered; the first asking the respondents to consider their general opinion about e-commerce, and the second asking the respondents to consider one of a specific set of Swedish web shops. The precursors to this study have used specific Italian e-commerce web sites (major or well-known ones), and a Chinese online shopping mall, respectively. Ultimately, the data from the second survey was never used, but is available upon request.

3.2.3.1 The surveys of the precursors
In the first precursor (Yoon, 2009), the research model from Gefen et al.’s study on e-commerce, trust and the TAM (Gefen, et al., 2003) was incorporated with Hofstede’s cultural dimensions. In the survey, Yoon asked the respondents to consider a particular online shopping mall, when answering the question. This is reasonable, as online shopping malls are dominating the Chinese e-commerce landscape. It was not motivated by the author why a specific case is used to represent an entire industry, but according to a Morgan Stanley Blue Paper, about 80% of China’s e-commerce is dominated by a marketplace driven ecosystem, with online marketplace ‘Tmall’ having a 55% market share by 3Q12 (Morgan Stanley Research, 2013, p. 63). Furthermore, it has been assumed but not confirmed that the questions presented in Yoon’s article are translations from Chinese to English of the questions used in his survey and that some meaning may have been lost in translation. In the Italian precursor, the authors translated the English version of Yoon’s survey to Italian, and used a number of major, well-known e-commerce web sites for their respondents to express their opinions about (Capece, 2014).

3.2.3.2 Alternations to the approach of previous research
As previously mentioned, three approaches of the survey were considered.

1. A generalization of the approach of the precursors, changing the scope of the questions to instead asking the respondents to consider e-commerce web sites in general.
2. Following the approach of the precursors more closely, keeping the scope of the questions on particular e-commerce web sites.
3. Asking the respondents to consider an e-commerce web site where they have recently made a purchase. This approach was taken by Gefen et al (Gefen, et al., 2003), when they conducted a survey aimed at understanding the role of TAM and Trust in repeat purchases. The study being one of the main inspirations of Yoon in his original study was an argument for considering this approach.

The first and more general approach was deemed most suitable and easiest to repeat in future research, and will be outlined in detail. The second approach, though better mimicking the research methods of previous studies (Capece, et al., 2013) and (Yoon, 2009), would be biased towards respondents who had more experience from online shopping, and would therefore be less representative in societies where e-commerce has less acceptance. Furthermore, due to e-commerce having taken so many shapes, and is undoubtedly going to continue to evolve further in the future, locking in on specific examples of e-commerce for the respondents to consider may not be beneficiary to the repeatability of the study: what people choose to trust, to use, and perceive as easy to use has changed with time, location and culture, and is likely to continue to do so. And last but not least, familiarity is an important precursor to trusting and finding an e-commerce web site easy to use, so removing the factor of chance that a respondent may have or have not been exposed to the e-commerce web site chosen for the survey should increase the validity of the survey. However, the changed approach also has implications for the types of trust measured. It is fairly widely accepted in this field of research to view intention to use as an operationalization of trust, but when changing the scope to a more general scope, the type of trust observed is changed from relational (where a specific object is judged to be trusted upon) to generalized (where general trust in a class of objects is evaluated). Empirical studies have shown these two concepts being statistically independent (Beatty, et al., 2011), so this change of scope may have implications on the results of the survey.

In total, the chosen approach opens for flexibility in a way that should not have any meaningful negative impact on the validity of the results, but rather the opposite.

3.2.3.3 Modifications of survey questions
Some of the questions of the original survey were deemed to be too dependent on being asked in a Chinese cultural context, and some expressions were not completely reproducible
meaningfully in the Swedish language, partly due to the author’s personal shortcomings, and partly because of the lack of nuances of some aspects of Swedish. The only intentional modifications made were of questions about the Long Term Orientation (LTO) dimension, which is strongly influenced by Confucian values on both sides of the scale. In an effort to maintain the cultural meaning of the LTO questions, measures were taken to verify that the modifications to the questions did not modify their meaning, but rather kept them in line with their initial cultural intentions. The LTO dimension is described in Long versus short-term orientation (LTO) under the section about Hofstede’s five dimensions of national culture in this report.

The original questions

LTO1. Thrift.
LTO2. Persistence (perseverance).
LTO3. Ordering relationships by status and observing this order.
LTO4. Having a sense of shame.

Were changed into

LTO1: I am thrifty.
LTO2: I am persistent.
LTO3: I observe status in relations, and respect that status. E.g. I show a great amount of respect toward older relatives.
LTO4: I care more about moral than I care about juridical laws.

Ultimately, the LTO dimension was removed due to unreliable data, which could be interpreted as a confirmation of the poor fit of Swedish values in this dimension.

3.3 Statistical methods

3.3.1 Validation and treatment of input data

The first survey, with the general approach to e-commerce, collected answers from a total of 224 respondents, and 156 of the answers were 100% complete including age and other personal information. Missing values were filled with series mean, using SPSS 22. Although 224 is a relatively low number of respondents provided by an online survey, it is by far
beyond the recommended minimum of 40 (10 times the number of items in the most complex construct) when performing confirmatory factor analysis by structural equation modeling (Gefen, et al., 2000), which was also confirmed when evaluating the reliability of the data. In order to improve the quality of the data, the number of items per construct included in the study should have been increased, rather than the number of respondents. (Chen, et al., 2003). SPSS and Microsoft Excel were also used to prepare a file suitable for import into PLS-Graph.

3.3.1.1 Component extraction and obtaining factorial validity
Component extraction is a procedure by which observed items in a model are fit to underlying (latent) constructs. Items are grouped by the theoretical model's prediction of the factors the items should relate to, and their fit is evaluated based upon how their variance contributes to the variance of the latent construct. In reality it is rare for all items in a theoretical model (and hence measured in a survey) to fit the data, and so items that load poorly, or with low significance are removed, as are items that load highly on multiple constructs. The goal of this process is to find a set of items, in which each item loads highly on one component (convergent validity), but low on all other components (discriminant validity). When all (retained) items have convergent and discriminant validity, the model can be said to have factorial validity.

There are several methods for identifying the factors, and two of these are factor analysis, and Structural Equation Modeling (SEM). In this thesis, the latter (SEM) was utilized for component extraction because the same is also suitable for evaluation of the hypotheses that there may be interaction effects between the latent constructs, and because it was used by Yoon (Yoon, 2009) in the first precursor.

Exploratory Factor Analysis, using Principal Component Extraction with Varimax rotation, was used in the Italian precursor to this thesis, but utilizing that method given the Swedish survey data provided no significant correlations between IUSE and the cultural factors, although it did confirm correlation between IUSE and PEOU, PU and TRUST, respectively. There are also recommendations against using such regression based techniques to test specific theoretical expectations about the structure of a set of measures (Gefen, et al., 2000).
In order to obtain factorial validity using SEM, the theoretical model was built in the software PLS-Graph Version 03.00 build 1130, and the survey data was loaded into the program. In an iterative process, items were eliminated from the model until each remaining item loaded properly on its latent construct. The criteria for an item not to be discarded were:

- t-value above 1.96 for convergent validity
- loading on the intended latent construct by at least 0.60
- loading on the intended latent construct significantly larger than on any other construct (indicating discrimination).

The result of the procedure was that 23 items loading on 8 latent constructs were retained in the model, and convergent validity was established. (See Table 9 Loadings of remaining items onto latent constructs, showing discriminant validity, below)
## Table 9 Loadings of remaining items onto latent constructs, showing discriminant validity

In order to establish discriminant validity, the square root of the Average Variance Extracted (AVE) of each underlying construct was compared with the correlation with every other underlying construct. With a square root of AVE much higher than the correlation with every other construct, discriminant validity is confirmed (Gefen, et al., 2000).

An even stricter rule to apply is to use the AVE instead of the square root of AVE, since the root will always be higher than its square root ($0 \leq \text{AVE} \leq 1$). In the case of the model and data in question, each latent construct’s AVE is more than 30% higher than the correlation with any other underlying construct, and though there is no clear definition of how much larger the AVE has to be (Gefen & Straub, 2005), 30% should fulfill the definition of much larger.
3.3.1.2 The construct that disappeared: Long Term Orientation (LTO)

When analyzing the survey data, it became apparent that the only item within the LTO component that had high enough loadings on any factor was the Thrift (I am thrifty) item, LTO1. This was problematic, because of its very strong relation to one of the main motivations for using e-commerce, namely price. It was therefore deemed that the risk of the price factor polluting the cultural effect of thrift was big enough to motivate also leaving thrift out of the equation, and as a consequence the entire LTO construct. In addition, using only one item to quantify the quite complex cultural dimension of Long Term Orientation (or any other dimension) is not recommended.

This does not mean that the LTO dimension is invalid as a concept. Instead, the conclusion is that the items chosen cannot be used to verify our respondents’ standpoint on the LTO scale, and that perhaps the items should have been designed with more care. As a whole, the Long-Term Orientation dimension, with its Confucian values on both poles, is hard to fit with the modern Swedish society.

### Table 10 Comparison between square root of AVE of each latent construct and correlation with every other latent construct, and CCR.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Factor</th>
<th>IUSE</th>
<th>PEOU</th>
<th>PU</th>
<th>TRUST</th>
<th>MAS</th>
<th>IDV</th>
<th>UAI</th>
<th>LTO</th>
<th>PDI</th>
<th>CCR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUSE</td>
<td></td>
<td>0.829</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEOU</td>
<td></td>
<td>0.337</td>
<td>0.856</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td></td>
<td>0.404</td>
<td>0.535</td>
<td>0.780</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRUST</td>
<td></td>
<td>0.516</td>
<td>0.278</td>
<td>0.319</td>
<td>0.947</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAS</td>
<td></td>
<td>0.124</td>
<td>0.012</td>
<td>-0.012</td>
<td>0.125</td>
<td>0.881</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDV</td>
<td></td>
<td>0.139</td>
<td>0.079</td>
<td>0.014</td>
<td>0.097</td>
<td>0.577</td>
<td>0.917</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAI</td>
<td></td>
<td>-0.131</td>
<td>-0.018</td>
<td>-0.090</td>
<td>-0.185</td>
<td>-0.011</td>
<td>0.038</td>
<td>0.791</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTO</td>
<td></td>
<td>-0.133</td>
<td>0.027</td>
<td>-0.033</td>
<td>0.010</td>
<td>0.058</td>
<td>0.107</td>
<td>0.119</td>
<td>0.707</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDI</td>
<td></td>
<td>-0.073</td>
<td>0.073</td>
<td>-0.005</td>
<td>-0.051</td>
<td>0.307</td>
<td>0.334</td>
<td>0.182</td>
<td>0.036</td>
<td>0.801</td>
<td>0.842</td>
<td>0.642</td>
</tr>
</tbody>
</table>

Square root of AVE

CCR Composite construct reliability

3.3.2 Hypothesis evaluation

Hypotheses H1 – H6 were validated through examination of the path coefficients, and their respective t-values (indicating significance), between the constructs in the theoretical model. The path coefficient can conceptually be perceived as an expression of the amount of variance conveyed by one (latent) variable onto another variable, hence a variable that has a high influence on another has a larger path coefficient (path coefficient x 100 = % variance explained by the independent variable on the dependent). The t-values were interpreted into levels of significance by employing a t-table for 200 degrees of freedom.
In order to evaluate the interaction effects in hypotheses H7 – H12, the steps of a guide on the subject (Chen, et al., 2003), were employed. The survey data was first standardized, setting mean to 0 and standard deviation to 1, using the statistical software SPSS22. Then the scores for every combination of the items to the latent constructs were multiplied with each other, in order to create interaction constructs consisting of the resulting items.

An interaction effect can be said to exist when the path coefficient from an interaction construct is not zero, and the t-value expresses significance.

The strength of the interaction effects were evaluated by Cohen’s $f^2$ (below), where the effect is perceived as small for $f^2 = 0.02$, medium for 0.15 and large for 0.35 (Chen, et al., 2003).

$$f^2 = \frac{R^2_{interaction\ model} - R^2_{main\ effects\ model}}{1 - R^2_{main\ effects\ model}}$$

### 3.4 Limitations

Using a social network web site to recruit respondents is fast and cheap, but clearly had implications on the quality of the respondent group in the case of this survey. The group of respondents was very homogenous, specifically with respect to level of education (71% marked University or higher as their educational level), and age (69% of the respondents marked their age being between 19 and 36).

Another complication is that the number of retained items is slightly low for some constructs. It is recommended to have 4 items, and discouraged to have below three items per factor when performing an analysis of interaction effects with PLS by SEM (Chen, et al., 2003), but for the constructs MAS, IDV and UAI, only two items remained when factorial validity was reached. Though not catastrophic for the study as a whole, it may have some impact on the evaluation of Hypothesis 10 (MAS has a positive effect on PEOU on IUSE).
Furthermore, as a result of personal shortcomings on part of the author, the first version of the survey did not include any question about the respondents’ neighborhood or the respondent living in, or being from, a city or rural areas. In Sweden, people from Stockholm are shopping more online than people from other cities and rural areas (Dibs, 2013), and should at the same time be scoring differently on some Hofstede dimensions than people from the countryside. Specifically, Stockholmers should be expected to score higher on the IDV and MAS dimensions than respondents from the countryside where Jante’s law is still present to some extent. As an improvement to the survey, the question about living in a city, a suburb or in the countryside was added after 150 responses, and city had a clear overweight in response frequency for respondents answering the question.

The validity of the comparison between the results of this study and the precursor studies, in terms of replication, can clearly be criticized. The precursors did not use the same statistical methods to evaluate the hypotheses, and although Capece was helpful beyond expectation, the author of this study failed to establish exactly which web sites were used for reference for the Italian study, though it was made clear that there were a number of well-known ones (Capece, 2014). Yoon, 2009, indicates having a specific “online shopping mall” as reference for his study, by the nature of the survey questions. It has been noted that online shopping malls, such as Tmall where even big brands such as Nike and Apple have stores (Wall Street Journal, 2014), are the main means of b2c e-commerce (online shopping malls having about 80% market share and Tmall having about 55% of that) in China (Morgan Stanley Research, 2013), in contrast to Europe, where a situation with businesses running the shops on their own domains is dominating, though Amazon.com is an influential player. Thus, it is natural that a Chinese e-commerce survey would focus on shopping through online shopping malls whereas a European survey would focus on shopping through individual businesses’ web shops. Because of these discrepancies, a decision to leave the type of e-commerce open was taken.

3.5 Ethical considerations

In order to accomplish the survey in accordance with ethical best practice, but without putting the validity of the survey at risk, all respondents participating in the survey were informed about the purpose of the survey and about how the information would be used.
All survey participants should be informed about the research, what its purpose is, and what organization is performing the research, (Fowler, 2009) but as a conscious deviation from this, however, the respondents were only briefly informed about the full purpose of the survey. This deviation was motivated by the unharmedful nature of the information shared by the participants, and by the risk that too detailed information about the purpose may influence the opinions of the respondents.

In order to compensate for the deviation, and to follow further recommendations by Fowler, the participants were ensured that their individual answers would not be related to their identity, that they can be anonymous if they would like, that any question can be skipped, and that partaking in the survey is completely voluntary.

A benefit in the form of SEK 1000 donated to Médecins Sans Frontières was offered as a ‘Thank you’ to the participants of the survey upon reaching 400 completed surveys, but this seemed to have little impact on the willingness to take part in the survey.

The choice of donating to charity instead of individual compensation to the respondents was done with Fowlers recommendations in mind, that “Benefits should not be so great as to undermine the principle that research participation is a voluntary act”, e.g. by providing compensations so large that respondents under financial stress may find it hard to say “no” (Fowler, 2009), and the idea that the money would be doing most good in the hands of MSF.
4 Empirical findings

4.1 Survey Data

In order to obtain the means, modes and standard deviations for each construct, the retained items in each response case were averaged and SPSS22 was used to calculate the numbers in the table. It is evident that the respondents find e-commerce very useful and that the outlook for future use is positive. Though there is still some trust issues, most respondents trust e-commerce.

Regarding the cultural dimensions, the relation between the scores could be expected to be similar to the Swedish scores on the Hofstede dimensions, but it is evident that that is not the case. However, the scores of the Hofstede dimensions, published by Hofstede, are not directly comparable with stand-alone scores from a Likert scale survey; the Hofstede scores are relative and not absolute, thus the scales may look very different between the constructs.

Thus, though it is tempting, it would be hard, if not impossible, to draw conclusions from a direct comparison between the results of this survey and Hofstede’s published scores.

Instead, a ranking of the countries based on the Hofstede dimension scores compared with a ranking of the countries survey scores could be somewhat validating that the respondent’s answers are in line with Hofstede’s previous findings. Doing this, it can be concluded that though the absolute numbers are not necessarily intact, the rankings are still the same for all valid cultural dimensions.

<table>
<thead>
<tr>
<th></th>
<th>PDI</th>
<th>IDV</th>
<th>MAS</th>
<th>UAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>31</td>
<td>71</td>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>China</td>
<td>80</td>
<td>20</td>
<td>66</td>
<td>30</td>
</tr>
<tr>
<td>Italy</td>
<td>50</td>
<td>76</td>
<td>70</td>
<td>75</td>
</tr>
</tbody>
</table>

Table 11 Hofstede’s five dimensions; scores for Sweden, Italy and China

<table>
<thead>
<tr>
<th></th>
<th>PDI</th>
<th>IDV</th>
<th>MAS</th>
<th>UAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>2.56</td>
<td>3.03</td>
<td>2.60</td>
<td>3.35</td>
</tr>
<tr>
<td>China</td>
<td>3.47</td>
<td>2.41</td>
<td>3.01</td>
<td>3.79</td>
</tr>
</tbody>
</table>

Table 12 Survey scores for Hofstede’s dimensions for Sweden and China. Italian scores were not available.
Table 13 Descriptive statistics of survey data

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>Std</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Usefulness</td>
<td>5.92</td>
<td>0.96</td>
<td>7.00</td>
</tr>
<tr>
<td>Perceived Ease of Use</td>
<td>5.41</td>
<td>1.06</td>
<td>6.00</td>
</tr>
<tr>
<td>Trust</td>
<td>4.96</td>
<td>1.18</td>
<td>5.00</td>
</tr>
<tr>
<td>Intention to Use</td>
<td>5.30</td>
<td>1.41</td>
<td>7.00</td>
</tr>
<tr>
<td>Power Distance</td>
<td>2.56</td>
<td>1.15</td>
<td>2.67</td>
</tr>
<tr>
<td>Individuality</td>
<td>3.03</td>
<td>1.22</td>
<td>3.00</td>
</tr>
<tr>
<td>Masculinity</td>
<td>2.60</td>
<td>1.25</td>
<td>2.50</td>
</tr>
<tr>
<td>Uncertainty Avoidance</td>
<td>3.35</td>
<td>1.34</td>
<td>3.25</td>
</tr>
</tbody>
</table>

4.2 Hypotheses H1 – H6

Hypotheses H1- H6, particularly inspired by Gefen et al (Gefen, et al., 2003), include the TAM constructs and their relation to trust. Hypotheses H1, H3, H5 and H6 were supported with 99% confidence, whereas H2 (PEOU has a positive impact on IUSE) and H4 (PEOU has a positive impact on TRUST) were supported with caution that the confidence is only 90%.

Furthermore, it should be noted that the $R^2$ is indicating a quite poor overall fit, with only 28.3% of the variance of the dependent variable (IUSE) explained by the independent variables.

<table>
<thead>
<tr>
<th>Hypothesis (H. in Gefen et al)</th>
<th>Path</th>
<th>Path coefficient</th>
<th>t-value</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 (H1)</td>
<td>PU → IUSE</td>
<td>0.217</td>
<td>2.83**</td>
<td>0.275</td>
</tr>
<tr>
<td>H2 (H2)</td>
<td>PEOU → IUSE</td>
<td>0.111</td>
<td>1.72*</td>
<td></td>
</tr>
<tr>
<td>H3 (H3)</td>
<td>PEOU → PU</td>
<td>0.497</td>
<td>8.72**</td>
<td></td>
</tr>
<tr>
<td>H4 (H10)</td>
<td>PEOU → TRUST</td>
<td>0.119</td>
<td>1.91*</td>
<td></td>
</tr>
<tr>
<td>H5 (H4)</td>
<td>TRUST → IUSE</td>
<td>0.395</td>
<td>6.88**</td>
<td></td>
</tr>
<tr>
<td>H6 (H5)</td>
<td>TRUST → PU</td>
<td>0.319</td>
<td>3.84**</td>
<td></td>
</tr>
</tbody>
</table>

+ Significant at the 0.10 protection level.
* Significant at the 0.05 protection level.
** Significant at the 0.01 protection level.

Table 14 Evaluation of hypotheses H1 – H6; path coefficients and t-values

4.3 Hypotheses H7 – H13

Observing the t-values of the interaction models provides that only one of the hypotheses H7 – H12 is supported by the survey data. With a one-tailed significance of 0.1, and a very small effect size (Cohens $f^2$ is 0.032), our data supports the hypothesis that lower Masculinity would strengthen the importance of Perceived Ease of Use. Furthermore, it is noted that the impact of the cultural factors is very small, if not insignificant, with a Cohens $f^2$ of 0.015 (half
of what is generally accepted as very small), indicating that though there may be statistical significance, there is little practical significance.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Main Effects Model</th>
<th>Interaction Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Path coefficient</td>
<td>t-value</td>
</tr>
<tr>
<td>H7</td>
<td>TRUST → IUSE</td>
<td>0.470</td>
</tr>
<tr>
<td></td>
<td>PDI → IUSE</td>
<td>-0.058</td>
</tr>
<tr>
<td>H8</td>
<td>TRUST → IUSE</td>
<td>0.403</td>
</tr>
<tr>
<td></td>
<td>IDV → IUSE</td>
<td>0.092</td>
</tr>
<tr>
<td>H9</td>
<td>PU → IUSE</td>
<td>0.217</td>
</tr>
<tr>
<td></td>
<td>MAS → IUSE</td>
<td>0.091</td>
</tr>
<tr>
<td>H10</td>
<td>PEOU → IUSE</td>
<td>0.113</td>
</tr>
<tr>
<td></td>
<td>MAS → IUSE</td>
<td>0.096</td>
</tr>
<tr>
<td>H11</td>
<td>TRUST → IUSE</td>
<td>0.411</td>
</tr>
<tr>
<td></td>
<td>UAI → IUSE</td>
<td>-0.003</td>
</tr>
<tr>
<td>H12</td>
<td>PU → IUSE</td>
<td>0.211</td>
</tr>
<tr>
<td></td>
<td>UAI → IUSE</td>
<td>-0.003</td>
</tr>
<tr>
<td>H13</td>
<td>Discarded due to lack of reliable data.</td>
<td></td>
</tr>
</tbody>
</table>

** Significant on the 0.01 level
* Significant on the 0.05 level
+ Significant on the 0.1 level

Table 15 Evaluation of Hypotheses H7 – H12; comparison of Main Effects Model with Interaction Model

In order to properly be able to compare the results of this study with Capece et al (Capece, et al., 2013), Pearson correlations were also calculated. The Trust + TAM is yet again validated with high significance, and a correlation between UAI and TRUST can be observed (though it has no implications on any of the hypotheses, and is merely regarded as a consequence of the close theoretical relation between trust and uncertainty avoidance).
### Pearson correlation

<table>
<thead>
<tr>
<th>Construct</th>
<th>PU</th>
<th>PEOU</th>
<th>Trust</th>
<th>IUSE</th>
<th>PDI</th>
<th>IDV</th>
<th>MAS</th>
<th>UAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU</td>
<td>1</td>
<td>.544**</td>
<td>.301**</td>
<td>.385**</td>
<td>-.007</td>
<td>.012</td>
<td>-.037</td>
<td>-.052</td>
</tr>
<tr>
<td>PEOU</td>
<td>.544**</td>
<td>1</td>
<td>.271**</td>
<td>.342**</td>
<td>.067</td>
<td>.024</td>
<td>-.010</td>
<td>-.018</td>
</tr>
<tr>
<td>TRUST</td>
<td>.301**</td>
<td>.271**</td>
<td>1</td>
<td>.492**</td>
<td>-.059</td>
<td>.070</td>
<td>.102</td>
<td>-.164*</td>
</tr>
<tr>
<td>IUSE</td>
<td>.385**</td>
<td>.342**</td>
<td>.492**</td>
<td>1</td>
<td>-.092</td>
<td>.051</td>
<td>.089</td>
<td>-.077</td>
</tr>
<tr>
<td>PDI</td>
<td>-.007</td>
<td>.067</td>
<td>-.059</td>
<td>-.092</td>
<td>1</td>
<td>.351**</td>
<td>.311**</td>
<td>.160*</td>
</tr>
<tr>
<td>IDV</td>
<td>.012</td>
<td>.024</td>
<td>.070</td>
<td>.051</td>
<td>.351**</td>
<td>1</td>
<td>.631**</td>
<td>.029</td>
</tr>
<tr>
<td>MAS</td>
<td>-.037</td>
<td>-.010</td>
<td>-.102</td>
<td>.089</td>
<td>.311**</td>
<td>.631**</td>
<td>1</td>
<td>-.015</td>
</tr>
<tr>
<td>UAI</td>
<td>-.052</td>
<td>-.018</td>
<td>-.164*</td>
<td>-.077</td>
<td>.160*</td>
<td>.029</td>
<td>-.015</td>
<td>1</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

*Table 16 Pearson Correlation between constructs (standardized)*
5 Analysis

5.1 Evaluation of the model

The $R^2$ of 0.283 for the complete research model and of 0.279 for the TAM only indicate a comparably poor fit and that the cultural dimensions do not add much value in explaining intention to use e-commerce in Sweden. In comparison, Yoon (Yoon, 2009) measured an $R^2$ of 0.465, and perhaps this difference is a reflection of the differences between a high-acceptance population and a population that is going through the acceptance process: our results indicate that the TAM is less appropriate to describe the attitudes of the Swedish population than the attitudes of the Chinese. Thus, there may be room for improvement of TAM as a model for prediction of intention to use e-commerce for high-acceptance populations, or at least the Swedish population, since the Hofstede dimensions had very little impact in this model.

The results also indicate that the Hofstede dimensions add very little power to the integrated trust and TAM model suggested by Gefen et al (Gefen, et al., 2003), and that researchers should look for other factors when modelling e-commerce acceptance. Practitioners’ surveys have indicated price, selection and convenience to be the main motivators for e-commerce use, and though the convenience factor theoretically could be included in the usefulness construct in TAM, attempts at finding research exploring the processes that take place after the actual transaction integrated with TAM and Trust.

Not disregarding the somewhat poor fit, there may still be some observations available to be made. Confirmation of the TAM-based hypotheses H1 - H6 should not come as a surprise; they have been supported by empirical data on several previous occasions, and TAM is arguably the most influential concept to explain e-commerce adoption (Beatty, et al., 2011). Furthermore, Hofstede’s approach is deemed to be inappropriate to describe the cultural differences (if any) that influence e-commerce acceptance in Sweden.

5.1.1 Hypotheses H1- H6

All the TAM-based hypotheses are supported by the data, though the path coefficients and confidence levels are on the lower side for H2 (Perceived Ease of Use has positive impact on Intention to Use) and H4 (Perceived Ease of Use has positive impact on Trust). This could be interpreted as PEOU being a relatively weak and unsecure predictor to IUSE and TRUST,
which could be a significant treat for populations with high IT maturity and high trust in e-commerce: little of the variance in IUSE and TRUST is explained by the variance in PEOU, simply because experienced users have seen examples of trust breaks and failure of e-commerce merchants to meet expectations in terms of factors that are not determined by the online pre-purchase experience. Examples of this may be e-commerce merchants who have beautifully designed, technology-wise well-functioning web shops, but instead fail to deliver products ordered within expected time frame, or in line with expected quality. This may also explain why Perceived Ease of Use is having a stronger influence on Perceived Usefulness than on Intention to Use and Trust.

There may also be other explanations to PEOU having a strong influence on PU: the respondents may be used to solve problems using less-than-intuitional computer tools (such as statistical software packages or advanced math programming environments), and apply more effort to solve their tasks instead of giving up – preferring task orientation over comfort, and thereby displaying masculine values. By experience from computer-related fields other than e-commerce, the respondents know that predictable outcomes can origin from complicated tools.

Previous studies have been able to confirm the hypotheses H1 – H6 with high confidence, using the TAM constructs and identical items. The limitation that the Swedish survey participants belonged to a comparably homogenous group of young, frequent shoppers (75% shopped online more than 7 times during the last 12-month period), with several years of e-commerce experience, likely to be biased towards an engineering degree because of the personal network used in spreading the survey, might be an underlying factor affecting how acceptance of usability problems is seemingly higher in this study than in those mentioned in the table below; in any case, the e-commerce trust of experienced Swedish shoppers is much less affected by Ease of Use than the e-commerce trust of the Chinese respondents (path coefficient 0.119 for Swedish respondents vs 0.590 for Chinese). In the case of Perceived Ease of Use on Intention to Use (path coefficient 0.111 for Swedish vs 0.198 for Chinese), Swedish shoppers are similar to Chinese in terms of giving up when an e-commerce service proves to be difficult to use, whereas Italians are likely to give up more easily. This implies that usability (relative to market standard) is somewhat important in the Swedish and Chinese markets, but very important in the Italian market. The Italian study
showed patterns similar to the Chinese, with Pearson correlation between PU and PEOU by 0.504 and between PEOU and TRUST by 0.518, significant on the 0.01 level, providing another case of a low-acceptance market where the PEOU is strongly affecting Trust.

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 (H1)</td>
<td>PU → IUSE</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
</tr>
<tr>
<td>H2 (H2)</td>
<td>PEOU → IUSE</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
</tr>
<tr>
<td>H3 (H3)</td>
<td>PEOU → PU</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
</tr>
<tr>
<td>H4 (H10)</td>
<td>PEOU → TRUST</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
</tr>
<tr>
<td>H5 (H4)</td>
<td>TRUST → IUSE</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
</tr>
<tr>
<td>H6 (H5)</td>
<td>TRUST → PU</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
<td>Supported**</td>
</tr>
</tbody>
</table>

*Significant at the 0.1 protection level  
**Significant at the 0.01 protection level

Table 17 Historical evaluations of Hypotheses H1 – H6

5.1.2 Hypotheses H7- H13

As stated above, H10 (The higher the MAS, the lower the effect of PEOU on IUSE) was supported by the survey data, using SEM by PLS, though the confidence level (one-tailed 90%) is low. Furthermore, its impact, as analyzed by Cohen’s \( f^2 \) as a function of the difference in \( R^2 \), is unsubstantial and implies that the practical relevance is very low (if any).

The data also indicates a direct effect of MAS on IUSE, where higher MAS is contributing to higher IUSE, and so MAS is a quasi-moderator – on one hand moderating the effect of PEOU on IUSE and on the other hand having a direct effect on IUSE. With higher MAS describing traditionally masculine values (task orientation and monetary earnings over comfort), and lower MAS describing traditionally feminine values (comfort over task orientation and monetary earnings), the result shows that more task- and earnings focused Swedes are more likely to use e-commerce, and care less about how easy they perceive it to be to use (simplicity and comfort has less impact on their decision making). However, Sweden is identified as a low-masculinity country, which could be an explanation to the very small size of the interaction effect.

None of the other hypotheses were supported by the data. As a consequence, in the light of our data and in spite of masculinity being identified (statistically) as a driver for IUSE, there is further reason to believe that the cultural factors, as described by Hofstede, should not be used to derive conclusions about why e-commerce has a high rate of acceptance in Sweden,
especially since Sweden is a low-masculinity country. If the focus is to find cultural explanations to e-commerce acceptance, there may be other models that describe cultural differences, but researchers should also consider looking for other factors, such as geographical and socio-economical, and the efficiency and reliability of distribution networks such as postal services. As stated in the introduction to this paper, Sweden has an old and strong tradition of long distance shopping, starting with catalog shopping from now international giants such as IKEA and H&M, paving way for an easy adoption of e-commerce.

It is, however, interesting to see the implications of national culture on the Chinese and the Italian markets in the light of the results of this study. In these, relatively speaking, low-acceptance markets, different cultural traits have higher impact on the intention to use e-commerce (Yoon, 2009), (Capece, et al., 2013) than in Sweden, and though Capece et al analyzed direct correlation between the cultural factors and the different constructs, rather than true interaction effects, the three studies altogether highlight differences in cultural attitudes towards e-commerce usage.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Path</th>
<th>Sweden</th>
<th>Italy</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>H7</td>
<td>TRUST × PDI → IUSE</td>
<td>-</td>
<td>Supported**</td>
<td>-</td>
</tr>
<tr>
<td>H8</td>
<td>TRUST × IDV → IUSE</td>
<td>-</td>
<td>Supported**</td>
<td>-</td>
</tr>
<tr>
<td>H9</td>
<td>PU × MAS → IUSE</td>
<td>-</td>
<td>-</td>
<td>Supported*</td>
</tr>
<tr>
<td>H10</td>
<td>PEOU × MAS → IUSE</td>
<td>Supported*</td>
<td>-</td>
<td>Opposite*</td>
</tr>
<tr>
<td>H11</td>
<td>TRUST × UAI → IUSE</td>
<td>-</td>
<td>-</td>
<td>Supported*</td>
</tr>
<tr>
<td>H12</td>
<td>PU × UAI → IUSE</td>
<td>-</td>
<td>-</td>
<td>Supported**</td>
</tr>
<tr>
<td>H13</td>
<td>TRUST × LTO → IUSE</td>
<td>-</td>
<td>-</td>
<td>Supported*</td>
</tr>
</tbody>
</table>

*Significant at the 0.1 protection level  
**Significant at the 0.01 protection level

Table 18 Historical evaluations of Hypotheses H7 – H13

6 Conclusion

Again, the TAM + Trust has proven to be a working model for describing the motivations behind use of a technology or service, though the R² measure of fit was significantly higher in the Chinese precursor to this study, indicating that TAM + Trust is more suitable for describing e-commerce acceptance in China than in Sweden. Since one of the major differences between the populations is the level of e-commerce use, apart from the cultural differences in themselves, the difference in fit could indicate that the TAM is more suitable for describing a maturing market than an already matured one: In the classic studies, where
TAM was first suggested, the respondents were exposed to a new information system, rather than one they were already using. Provided this, and the fact that the applications of the TAM rarely or never include research about the processes that start after the transaction has been completed, there are indications that the TAM + Trust model could be improved to better describe a saturated market, or that there may be other models that are altogether more suitable for this purpose.

Furthermore, it is clear that trust has a strong influence on Swede’s intention to use e-commerce. There is vast research on the subject of e-commerce trust, and the dominating conclusion is that trust is essential for repeat purchases (Gefen, et al., 2003) as well as from a more general perspective (Beatty, et al., 2011), indicating that the Swedish case is not unique in this sense. However, while Trust has been shown to be important, practitioners as well as researchers are encouraged to look beyond the factors included in this study.

The level of effect of Perceived ease of use on Trust and Intention to use in Sweden in comparison to Italy and China provides an interesting indication that the importance of Perceived ease of use is diminishing with increased use. The PEOU – Trust relation where Swedish (experienced) are judging less by appearance and more by experience may be an indication of diminishing initial trust (based on appearance and situational normality) and increasing relational trust (based on experience and hear-say).

It can also be concluded that the cultural differences, as described by Hofstede’s dimensions, are not fit for describing Swedish e-commerce attitudes. This, too, may have to do with the high acceptance level – i.e. using e-commerce has become such a norm that the cultural profile of the respondents has little impact, and that more tangible arguments such as convenience, cost and usability become much more important than culture and tendency to accept new technology.

As a consequence, based on the results of this study, the main contribution in terms of providing tangible recommendations to practitioners with interests in the Swedish e-commerce market, would be to ignore the cultural factors and instead focus on trust by using customer feed-back, credit guarantees, escrow services and other tools incurring assurance is recommendable, customer satisfaction by delivering a great customer journey from start to end, and as vast a product selection as financially viable.
7 Future research

The results of the analysis incurred curiosity about convenience while providing that cultural factors, as measured in Hofstede’s dimensions, did not have any strong effects on Swedes intentions to use e-commerce. There is reason to investigate whether convenience could perhaps be a factor that should be added to the TAM + Trust constructs and be considered a separate latent construct. This would also contribute to research into the processes that occur after the transaction has been initiated, as suggested above.
8 References

8.1 Bibliography


Available at: scholar.google.com
[Accessed 1 December 2014].


Morgan Stanley Research, 2013. eCommerce Disruption: A Global Theme - Transforming Traditional Retail, s.l.: Morgan Stanley Research.


9 Appendix

9.1 Appendix A: Survey questionnaire – English translation from Swedish

In order to, to the best extent possible, account for words or meanings lost in translation follows here an English translation of the Swedish questionnaire used.

9.1.1 Perceived usefulness (PU)

PU1: Web shops are usable for searching for, and buying, goods or services.
PU2: Web shops make me more efficient when I am searching for, and buying, goods or services.
PU3: Web shops provide me with the opportunity to quicker find what I am looking for.
PU4: Web shops are usable for finding inspiration for purchases.

9.1.2 Perceived ease of use (PEOU)

PEOU1: It is easy to become proficient in using web shops for purchasing.
PEOU2: It is easy to learn how to use web shops for purchasing.
PEOU3: It is clear and obvious how I interact with web shops.
PEOU4: Web shops are easy to use.

9.1.3 Trust (TRUST)

TRUST1: Web shops are reliable to shop from.
TRUST2: Web shops are trustworthy.
TRUST3: I trust web shops.

9.1.4 Intention to use (IUSE)

IUSE1: I will shop online when offered the possibility.
IUSE2: I will often shop from web shops.
IUSE3: It is very likely that I provide information that makes it possible for web shops to better serve my needs.

9.1.5 Power Distance Index (PDI)

PDI1: Employees are afraid to express an other opinion than their managers.
PDI2: Employees should follow the decisions of managers unconditionally.
PDI3: Managers should make most decisions by themselves.
PDI4: Employees should not question the decisions of managers.

9.1.6 Individuality Index (IDV)
IDV1: Rewards for individuals are more important than the welfare of the group.
IDV2: The success of individuals is more important than group success.
IDV3: To be autonomous and independent is more important than being part of a group.

9.1.7 Masculinity Index (MAS)
MAS1: To solve one's task is more important than caring for others.
MAS2: A job with high salary is better than a job with high quality of life.
MAS3: Men should be strong and women should be tender.

9.1.8 Uncertainty Avoidance Index (UAI)
UAI1: I am worried when I start a new job.
UAI2: I am worried about uncertainty about the future.
UAI3: I am worried when facing weird or unknown situations.
UAI4: It is risky to do something that has not been done before.

9.1.9 Long Term Orientation (LTO)
LTO1: I am thrifty.
LTO2: I am persistent.
LTO3: I observe status in relations, and respect that status. E.g. I show a great amount of respect toward older relatives.
LTO4: I care more about moral than I care about juridical laws.

9.2 Appendix B: Survey questionnaire – English version of original study
The English version of the survey, presented in Yoon, 2009, is accounted for below. It is included in this paper as a reference to the original study in order to provide the reader with means to validate the quality of replication of the study, and for future researchers to be inspired by. It is possible that the original survey was performed in another language. There were (unsuccessful) attempts at contacting the author, at the time of writing this paper, in
order to provide the opportunity to comment on the method. The questions listed below are were given answer alternatives on a Likert scale from 1 (Strongly agree) to 7 (Strongly disagree).

### 9.2.1 Perceived usefulness (PU)

- **PU1.** The web site is useful for searching and buying goods.
- **PU2.** The web site enhances my effectiveness in searching and buying goods.
- **PU3.** The web site enables me to search and buy goods faster.
- **PU4.** The web site enhances my effectiveness in searching and buying goods (dropped).
- **PU5.** The web site is useful for shopping for goods.

### 9.2.2 Perceived ease of use (PEOU)

- **PEOU1.** It is easy to become skillful at using the web site.
- **PEOU2.** Learning to operate the web site is easy.
- **PEOU3.** My interaction with the web site is clear and understandable.
- **PEOU4.** The web site is easy to use.

### 9.2.3 Trust (TRUST)

- **TRS1.** The web site is reliable in shopping goods.
- **TRS2.** The web site is trustworthy.
- **TRS3.** I trust the web site.

### 9.2.4 Intention to use (IUSE)

- **IUSE1.** Given the chance, I intend to use the web site.
- **IUSE2.** I will frequently use the web site.
- **IUSE3.** I am very likely to provide the online shopping mall with the information it needs to better serve my needs.

### 9.2.5 Power distance (PDI)

- **PDI1.** Subordinates afraid to express disagreement with their superiors (dropped).
- **PDI2.** Subordinates should follow their superior’s decisions unconditionally.
- **PDI3.** Managers should make most decisions by themselves.
- **PDI4.** Subordinates should not question their superior’s decisions.
9.2.6 Individualism (IDV)

IDV1. Individual rewards are more important than group welfare.
IDV2. Individual success is more important than group success.
IDV3. Having autonomy and independence is more important than being accepted as a member of a group.

9.2.7 Masculinity (MAS)

MAS1. The fulfillment of tasks is more important than caring for others.
MAS2. A job with high earnings is better than a job with quality of life.
MAS3. A man should be strong and a woman should be tender.

9.2.8 Uncertainty avoidance (UAI)

UAI1. When starting a new job, I fear doing it.
UAI2. I fear uncertainty about the future.
UAI3. I fear ambiguous situations and an unfamiliar adventures.
UAI4. It is risky to do something that has never been done before (dropped).

9.2.9 Long-term orientation (LTO)

LTO1. Thrift.
LTO2. Persistence (perseverance).
LTO3. Ordering relationships by status and observing this order (dropped).
LTO4. Having a sense of shame.