

DISINTERMEDIATION, ALTERED CHAINS AND ALTERED GEOGRAPHIES: THE INTERNET IN THE THAI SILK INDUSTRY

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ABSTRACT

The Thai silk industry is in a worrying position. For centuries the industry has provided economic support to hundreds of thousands of people in the northeast of Thailand and become a part of the region's cultural heritage. However, the industry is now dying largely because of uncompetitive nature of the silk being produced. This paper therefore examines one of the most widely touted development strategies: the use of the internet to both expand markets and disintermediate commodity chains. Using surveys and interviews, this study examines the geographic and topological effects that the internet has had in the value chains of Thai silk.

1. INTRODUCTION

Thailand has a millennia-old tradition of silk production that has survived up to the present day. Statistics vary considerably on the matter, but it is estimated that there are between 150,000 and 500,000 households, mostly in northeastern^{1,2} Thailand (see figure 1), which are dependent on the production of silk for supplemental income (Pye, 1988; Rani, 1998; UNCTAD/WTO, 2002). While the country's silk industry is significantly more developed than those of other Southeast Asian nations, Thailand lags behind China and India in terms of total raw and finished silk production (Datta, 1996; UNCTAD/WTO, 1997, 2002).

The Thai silk industry is distinct in Southeast Asia in its predominant use of handlooms (Rani, 1998). Reeling and weaving are most often performed by hand by rural women and elderly household members (Charsombut & Islam, 1992; Ohno & Jirapatpimol, 1998; Otsuka, 1982). This is in part because native and hybrid varieties of Thai yarn cannot be machine reeled, but the persistence of handloomed silk can also be attributed to the commercial viability of traditional fabrics which are not mass produced (Montlake, 2007; United Nations, 1994). While no specific study on the production chains of the Thai silk industry exists to date, Cohen's study of crafts in Thailand (2000) indicates that an increasing amount of profit is made at each step away from the producer in the production chain. i.e. the making of the craft itself is the least profitable step, while foreign importers set the highest mark-ups.

Thai silk producers are currently in a worrying economic position. The old global Multi Fibre Arrangement (MFA), which expired in 2005, set export limits to wealthy countries on textiles (APEC, 1998; Suphachalasai, 1994; Yearman & Gluckman, 2005). However, with its expiration, Thailand's National Economic and Social Development Board and the World Bank (2005) warn that Thai silk is highly uncompetitive in comparison to

¹ The National Statistical Office of Thailand define the Northeast as Nakhon Ratchasima, Buri Ram, Surin, Si Sa Ket, Ubon Ratchathani, Yasothon, Chaiyaphum, Amnat Charoen, Nong Bua Lam Phu, Khon Kaen, Udon Thani, Loei, Nong Khai, Maha Sarakham, Roi Et, Kalasin, Sakon Nakhon, Nakhon Phanom and Mukdahan provinces. These nineteen Northeast provinces are all situated in-between northern Cambodia and the southern border of eastern Laos.

² The Northeast of Thailand is commonly referred to as 'Isan' or 'Isaan.'

Chinese and other imported fabrics. They estimate that large reductions in labour costs or increases in productivity are needed. Lower labour costs are clearly not a desirable option, and although increases in productivity at first sound appealing, the necessary adoption of hybrid or foreign higher-yield silk would eliminate domestic varieties that are the basis for traditional Thai hand woven silk products.

In response to these dilemmas, a number of commentators have proposed using the internet as an effective strategy to bring economic wealth into impoverished regions of Thailand (this is not to say that other incentives such as subsidies have not also been proposed) (Chandrasekaran, 2001; Sambandaraksa, 2006; Thuvasethakul & Koanantakool, 2002; United Nations, 2003). The internet can be employed as a marketing tool to promote the high-quality and uniqueness of Thai silk products, allowing Thai producers to highlight the differences between domestic products and cheaper imports (rather than competing directly with them) (Richards, 1999). More importantly, the internet also offers the potential to disintermediate the silk production chain, reducing the amount of surplus extracted by intermediaries (Benjamin & Wigland, 1995; Javalgi & Ramsey, 2001; Office of Technology Assessment, 1994).

These assertions, however, are not without problems. There has been a massive expansion of the Thai internet infrastructure, but only between five and ten percent of the population have access (NECTEC, 2004; Palasri, Huter, & Wenzel, 1999). It remains to be seen, then, whether the internet can truly produce tangible benefits not only to large firms, but also to silk producers who have fewer economic resources. Furthermore, there are fears, reflected in not only academic and policy writing, but also in music and literature (e.g. Sudham, 2002), that instant access to distant markets will have negative effects on Thai culture and Thai cultural products such as silk (Hongladarom, 2000).

Yet, anecdotes about disintermediation abound. Romero (2000 in Leinbach 2001) has reported on a group of rural Guyanese weavers who, with newfound connections to the internet, began successfully selling hammocks online³. Disintermediation is often written about as an inevitable force that will ultimately reshape most contemporary economic activity (Keegan, 2006), and perhaps as a result, the disintermediation discourse has been able to attract many powerful backers. One in-depth research project in Thailand has found that firms with web sites are generally able to increase sales (UNCTAD, 2007). Perhaps because of such studies, Vanichvisuttikui and Jungthirapanich (2004) are similarly optimistic about the potentials of the internet to promote Thai craft industries⁴. The authors lament the lack of internet access in rural Thailand, arguing that it is precisely this lack that is keeping craft producers from exporting their wares. Vanichvisuttikui and Jungthirapanich state:

Without the infrastructure, how could these rural people learn the technology to have the knowledge concerning the development of e-commerce? Also, how could they distribute their products to compete in the worldwide market?
(Vanichvisuttikui & Jungthirapanich, 2004: 74)

³ However, despite being extremely successful economically, the project ultimately upset existing village relations and as a result is no longer in existence (Leinbach, 2001).

⁴ Optimism about the potentials of the Internet in the context of crafts industries is not unique to Thailand. A USAID sponsored report on issues of gender, IT, and development, for example, highlights the ability of the Internet to economically empower women by allowing them to sell crafts to distant markets (Hafkin & Taggart, 2001).

Poon and Jevons (1997: 34) state that “because the internet creates a ‘borderless’ virtual business platform on which suppliers, customers, competitors and network partners can freely interact without going through the pre-defined channels on the value chain, members of the same business network or of different networks can by-pass the traditional interaction patterns and form virtual value chains” (for a similar argument see Benjamin & Wigland, 1995). As such, “the internet has diminished many of the information asymmetries (and hence power asymmetries) between sellers and buyers” (Gereffi, 2001: 1628). Firms in ‘developing nations’ can use transparency brought about by the internet to find new customers in order to ‘escape local de facto monopolies’⁵ (Goldstein & O’Connor, 2000; UNCTAD, 2002, 2005). In a borderless world, it is argued that historical competitive advantages such as firm size become irrelevant because the internet can “level the competitive playing field by allowing small companies to extend their geographical reach and secure new customers in ways formerly restricted to much larger firms” (OECD, 1999: 153; see also UNCTAD, 2006).

The arguments above, interestingly move beyond viewing the internet as a tool for disintermediating commodity chains, and also see it as a technology with the power to accomplish an unfettered geographic expansion of markets. Purcell and Toland (2004: 241) claim: “ICT[s] offer the opportunity to reduce the barriers of distance, and give...countries better access to the global economy.” According to the International Telecommunication Union, the internet “provides developing countries with a unique opportunity to compete in market places that were beyond their reach”⁶ (Ntoko, 2007: 1).

This is not to say that degrees of nuance have not been added by commentators focusing on the uses of e-commerce by firms to find new and distant customers who wish to move beyond the idea of a ‘borderless world’ enabled by information and communication technologies (ICTs) (Daniel & Grimshaw, 2002; Hamill & Gregory, 1997; Kim & Mauborgne, 1999; O’Keefe et al., 1998; Poon & Swatman, 1999). Yet, the effects of the internet as an instrument of development within craft industries remains largely unstudied. As such, this paper examines the ways in which the internet has been integrated into the production chains of the Thai silk industry.

The paper is divided into three sections. First the geographies of the online Thai silk industry are examined. Second, the paper examines whether the internet has had any effect on the spatial reach of Thai silk sellers. The final section then looks at whether the internet is associated with the disintermediation of value chains. Ultimately, by examining these three aspects of the integration of the internet in the Thai silk industry, the paper allows us to see whether the promises of the internet, that have been so widely touted, are being realised in the context of the Thai silk industry.

2. METHODS

The work presented in this paper was derived from a two-step methodological approach. First, institutional surveys were carried out with silk merchants, producers, and managers of cooperatives that use the internet. Second, face-to-face surveys were conducted with a sample of merchants and producers that do not necessarily use the internet.

2.1 Internet Adopters

⁵ A classic example of the Internet bringing about market transparency is relayed by Anderson (2005), who describes the planned use of the Internet to allow Laotian villagers better understand the market price for their crops in nearby towns.

⁶ Overå’s (2006) case study of the ways in which cell phones are used by informal traders to facilitate long-distance trade lends support to this argument.

Two groups of EAs are included in this study. The first group, the *Internet Adopters* consists of producers and merchants that sell Thai silk with the assistance of at least one webpage. To be included, members of this group had to devote a substantial amount of their website to the selling of Thai silk. The 'Internet Adopters' were discovered by using a variety of keyword searches with the Google search engine. Even though Google by no means offers an unbiased or scientifically neutral ranking of pages, highly ranked pages are generally those that are active and receive a relatively large amount of web traffic (Cotlier, 2001; Cotriss, 2002; Introna & Nissenbaum, 2000; Lewandowski, 2005). Using the keywords: [Thai + Silk], and [Thailand + Silk] one hundred and thirty nine websites were discovered. The Google searches led to a few web pages that are hosted on third party sites, most notably eBay and etsy.com. Secondary searches were then performed on those third party sites to discovered thirty additional sellers that regularly sell Thai silk.

All one hundred and sixty nine 'Internet Adopters' (one hundred and thirty nine websites plus thirty online marketplace sellers) were contacted by either email, forms on their websites, or telephone. They were asked to complete the survey either online at www.questionpro.com or during a face-to-face meeting. Ultimately, forty-seven 'Internet Adopters' completed a majority of questions in the survey.

The forty-seven respondents represent a quite low rate of response: 33.8 per cent. Twenty-one emails to potential respondents (15.1 per cent) were automatically returned with error messages such as, "your message could not be delivered to one or more recipients." Follow up emails sent over subsequent months were also returned in the same manner. These returned messages are unmistakable signs of businesses no longer in operation. Given the low rate of response, it is likely that a significant proportion of the other websites contacted are no longer active and are mere shells of a formerly active business with unmonitored mailboxes.

2.2 Thai Silk Sellers

The second group, *Thai Silk Sellers*, consists of merchants and silk producers in Thailand that were found without the assistance of the internet. The initial goal was to enlist eighty 'Thai Silk Sellers' from four sub-groups:

- (a) silk merchants in Bangkok;
- (b) silk merchants in Khon Kaen and Nakhorn Ratchasima (the two commercial silk centers of the Northeast);
- (c) silk producing firms in Northeast Thailand;
- (d) self-employed silk weavers in Northeast Thailand.

The initial plan also called for the selection of silk merchants in Bangkok, silk merchants in the Northeast, and silk producers in the Northeast from lists provided by the Thai Silk Association (sub-group a), professors at Khon Kaen University and the Korat Silk Association (sub-groups b and c). However, the lists contained fewer producers and merchants than expected, and it was therefore necessary to alter sampling strategies.

For sub-group 'a,' convenience sampling was used to contact as many merchants as possible in Bangkok. Silk merchants were located using assistance from the Thai Silk Association, interpreters, merchants, and local shoppers. While participation was certainly not requested from every silk shop in the city, all of the major clusterings of silk shops in Bangkok (Silom, Sukhumvit, Banglamphu, Chatuchak, and most of the major malls) were visited. At each location, every shop that primarily sold silk, silk products, or fabric was visited and a request was made for a manager to complete a survey (which was identical to those given to the Internet Adopters). Approximately twenty-five percent of shops were willing to complete a survey.

The lack of a comprehensive database of any of the other sub-categories led to the adoption of a similar sampling strategy for sub-groups 'b,' 'c,' and 'd.' With regard to sub-group 'b,' almost every merchant in Khon Kaen and Nakhorn Ratchasima was approached. Perhaps due to the relatively less hectic nature of silk shops in Khon Kaen and Nakhorn Ratchasima, the ratio of silk merchants willing to complete a survey rose to about fifty percent.

For sub-groups 'c,' and 'd' efforts were focused on two Northeastern districts that specialise in and are centres for two distinct types of silk. Chonnabot in Khon Kaen specialises in mudmee silk, and Packthongchai in Nakhorn Ratchasima focuses on the production of plain coloured silk. In Chonnabot the district government provided a list of all silk producing groups. Ten producers were randomly selected from the list, and the district government official in charge of craft products contacted each producer and asked them to attend a meeting in the Chonnabot town government building. A similar strategy was adopted in Packthongchai. The Korat Silk Association has a database of all producers in Packthongchai. Ten producers were randomly selected from that list and were contacted at the sites of production. In Packthongchai and Chonnabot, the Korat Silk Association and the Chonnabot district government were asked to arrange contacts with self-employed weavers (sub-group d).

As discussed above, an initial assumption was that respondents could be broken down into four distinct sub-groups. However, once the data collection phase of the project began, it became clear that these sub-categories were over-simplifications of the economic activities involved in the Thai silk industry. For example, a number of firms can be defined by both categories (a) and (c). That is, they employ production workers in the Northeast, but operate at least one shop in Bangkok. The precise breakdown of respondents is displayed in table 1. Location and position were integral to the research design regarding the selection of 'Thai Silk Sellers.' The initial strategy was to collect information from twenty respondents from each sub-group. Apart from sub-group 'd' (self-employed weavers), this task has been achieved.

Table 1: 'Thai Silk Sellers'

Type	Count
Silk merchants in Bangkok	21
Silk merchants in Bangkok/silk producing firms in Bangkok	2
Silk merchants in Bangkok/silk producing firms in the Northeast	16
Silk merchants in the Northeast	21
Silk merchants in the Northeast/silk producing firms in the Northeast	27
Silk producing firms in the Northeast	30
Self-employed weavers in the Northeast	8
Other	1
Total	126

3. THE SITES OF INTERNET USAGE

In order to make any meaningful statements about the possible effects of the internet, it is first necessary to understand where it is being used. This involves exploring not only the sites of internet usage on a national or sub-national scale, but also where those sites fall (topologically) within commodity chains of silk. The topological positions of internet users are especially important, because by knowing whether producers or intermediaries are

attaining cyberpresence, we can judge whether the disintermediating potentials of the internet have been realised.

3.1 Location of All Websites Selling Thai Silk

Determining the location of websites is always a somewhat problematic task because location can have a variety of meanings. Location could mean: the location of the registry of the domain, the location of the servers which host the website, the location of at which the site was created, the location of head offices, or any number of other definitions. For the purposes of this paper, location will be used to refer to the location of head offices. This definition provides the most solid indicator of the sites of control and capital accumulation, but is also the most challenging to determine. While locations of domain registrations, for example, are easily determinable in WHOIS⁷ data, the sites of head offices had to be gathered individually from either information on websites or conversations with the owners of websites.

3.2 Locations of Internet Use by Country

If we start by looking at the location (see Table 2), by country, of all websites that sell Thai silk, it can be seen that the bulk of sites are located in Thailand (58 per cent). Eighteen percent are located in the United States and nine percent are located in other countries. Fifteen percent cannot be definitively placed, but from an examination of those websites it seems that a majority of the 'unknown' category are also located in Thailand.

Roughly half (52 per cent) of silk-selling websites in Thailand are located in Bangkok, with another 9 per cent in Central Thailand (suburbs and satellite towns of Bangkok) (see Table 3). Interestingly a significant proportion of websites can be found in provinces that receive significant numbers of foreign tourists but have little or no local silk production. Thirteen percent of websites that list silk for sale are located in Chiang Mai and Northern Thailand, and another eight percent are located in Pattaya (the Southeast) or Southern beach towns. Only twelve percent of Thailand-based websites are based in the Northeastern provinces in which the vast majority of Thai silk is produced.

3.3 Locations of Internet Use within Thailand

Because the Thai Silk Sellers survey was conducted in Thailand, the total distribution of survey respondents (on a national scale) is strongly skewed toward Thailand. As a result, examining the distribution of survey respondents on an international scale does not yield useful results. Exploring the locations of internet use within Thailand, however, proves more insightful.

The first bars in Figure 2 highlight the locations of all survey respondents that are based in Thailand⁸, including respondents who fall under the category 'Thai Silk Sellers' as well as those that can be described as 'Internet Adopters.' The bars with lighter shading represent a variety of ways of measuring internet use. The second bar displays the total number of 'Internet Adopters' in each region, while the third and fourth respectively measure whether an EA has a website and uses email⁹.

⁷ WHOIS is an Internet protocol used to query an official database containing information (including location data) about the ownership of most domain names.

⁸ i.e. a combination of the surveys which were filled out in person and online.

⁹ Measuring the use of websites or email captures all 'Internet Adopters' plus the 'Thai Silk Sellers' connected to the Internet.

Table 2: Location of All Websites Selling Thai Silk by Country

Location	Count
Thailand	81
USA	25
UK	5
China	3
Australia	1
Canada	1
Japan	1
Norway	1
Unknown	21
Total	139

Table 3: Location of All Websites Selling Silk in Thailand

Location	Count
Bangkok	42
Northeast	10
Chiang Mai	10
Central	7
Pattaya	3
South	3
North	1
Unknown	5
Total	76

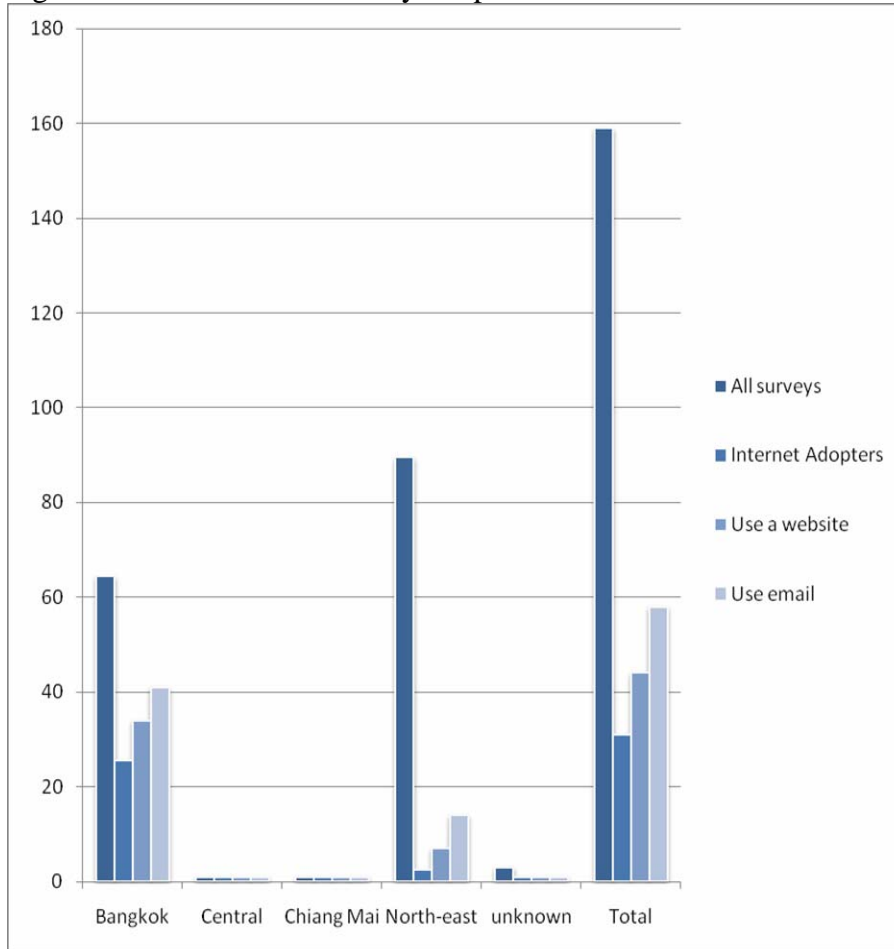
While these data do not provide a reliable indication of the proportion of silk businesses using the internet¹⁰, the graphs still paints a striking picture of a concentration of internet use in Bangkok. It should also be pointed out that the sample is heavily biased towards the inclusion of EAs located in Bangkok and the Northeast, while largely ignoring EAs in other parts of the country. Nonetheless, the chart does still specifically provide a glimpse at how the Northeast is under-represented in its internet presence.

Because of the bias that the 'Internet Adopters' introduce into an analysis of who is using the internet¹¹, figure 3 measures only the locations of 'Thai Silk Sellers.' The second and third bars again measure the amount of EAs in each location that have their own websites and use email. This chart provides a more accurate representation of the percentage of EAs in both Bangkok and the Northeast that use the internet. Twenty- four percent of EAs in Bangkok have a website while a full forty-one percent use email. In the Northeast only six percent of respondents have their own website, and fourteen percent use email.

¹⁰ Due to the fact that this sample contains all 'Internet Adopters' who were specifically included in the sample precisely because they do use the Internet.

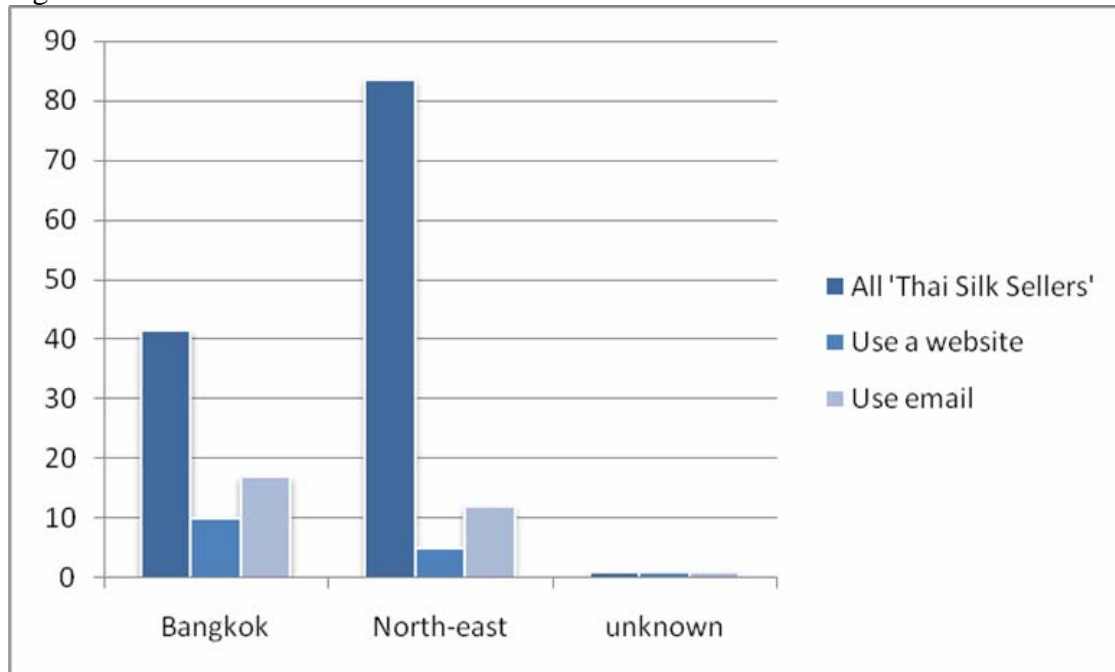
¹¹ It should be noted that these data in many ways reflect the findings of the 2003 Thai Manufacturing Survey. That survey found that approximately thirty percent of textile businesses had a web-presence (UNCTAD, 2007).

Figure 2: Location of all Survey Respondents in Thailand



Note: As mentioned earlier, there can be some degree of overlap between geographic categories since sites of management, sales, and production are not always in the same place. For the purpose of this chart, a location was assigned based on the home or headquarters of the EA. However, if respondents sold in a Bangkok market but were otherwise located in another region, 0.5 was assigned to each place.

Figure 3: Location of 'Thai Silk Sellers'

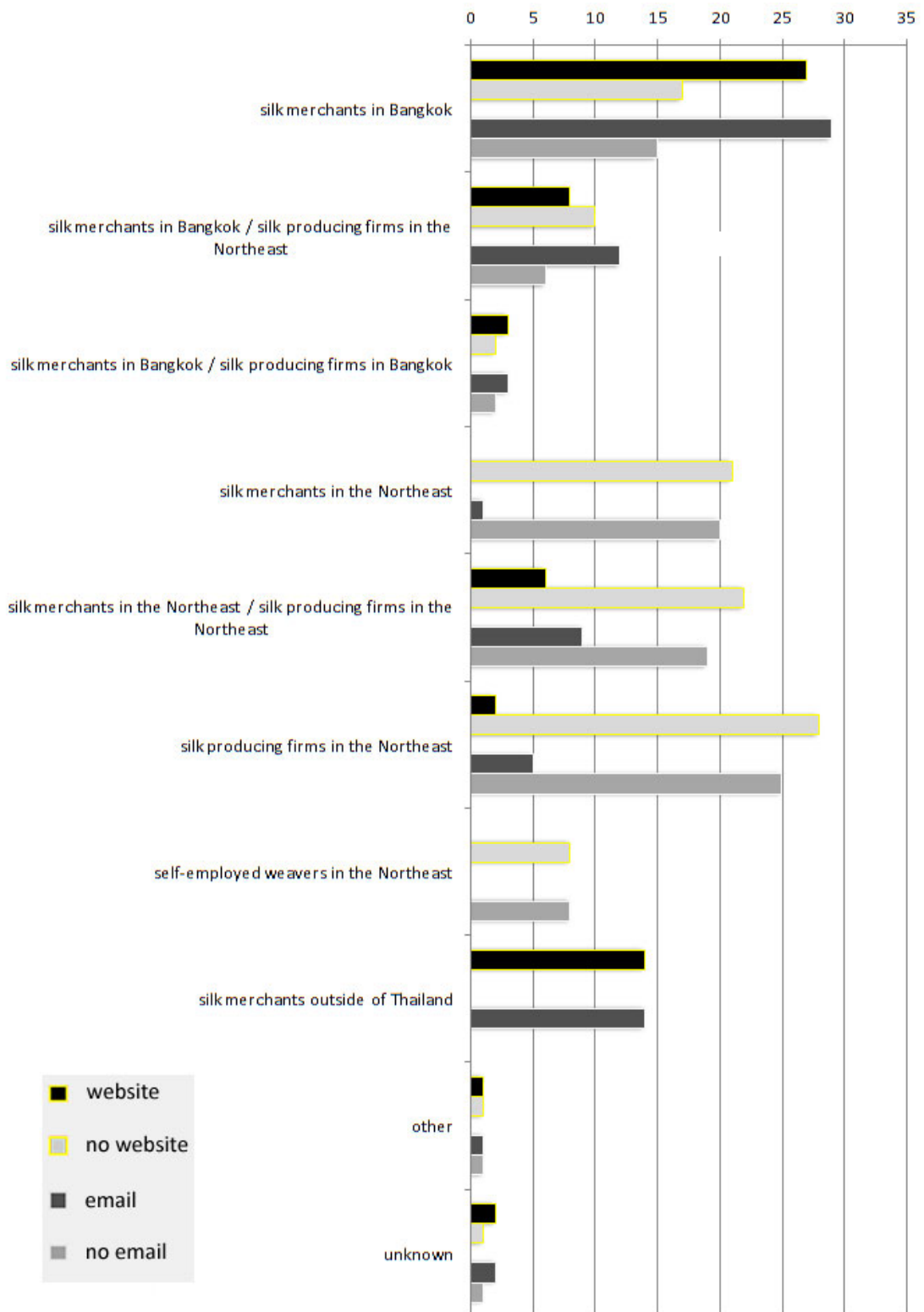


Note: If respondents sell in a Bangkok market, but are otherwise located in the Northeast, 0.5 was assigned to each place.

3.4 Location of Internet Use by Sub-Category

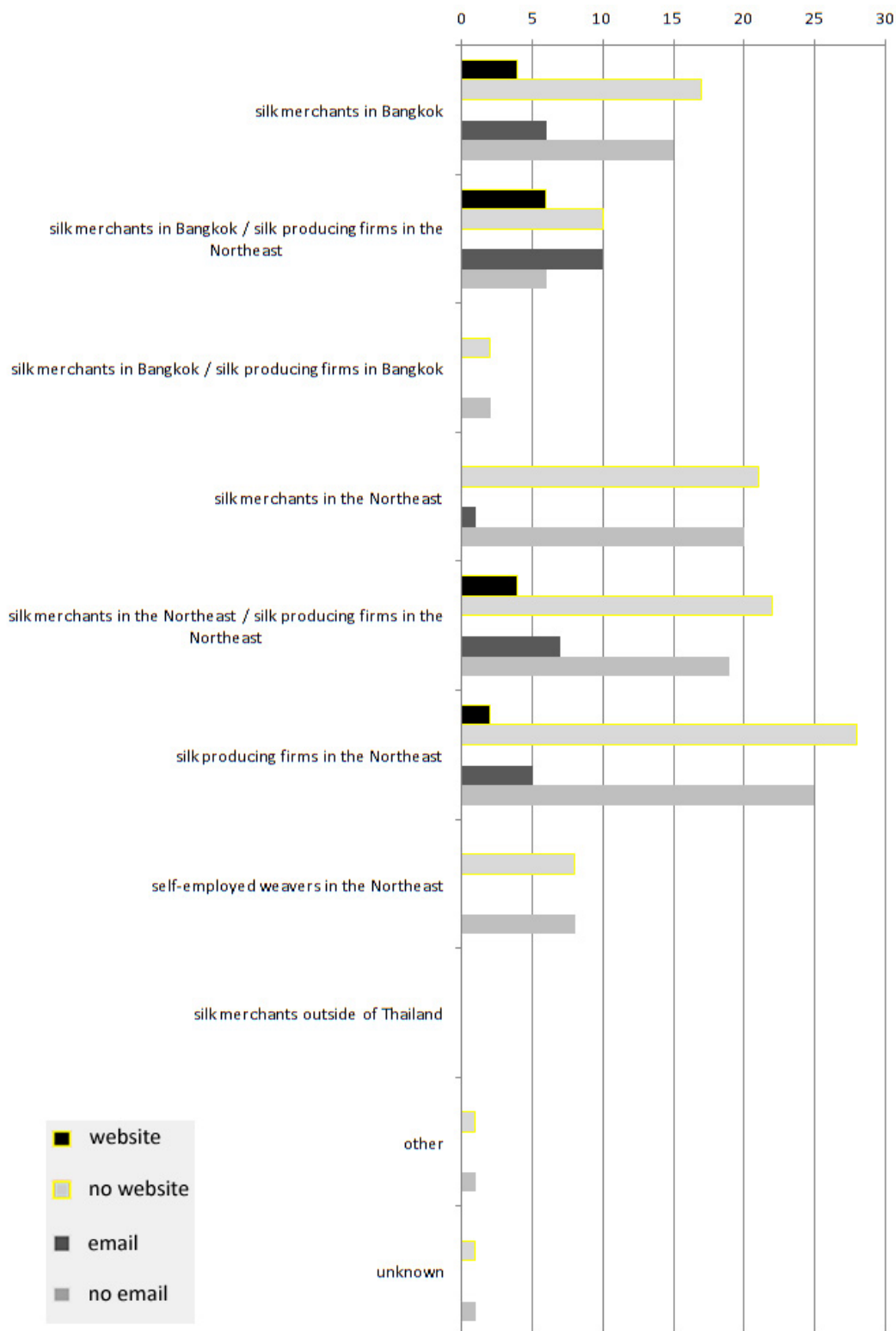
Finally, a more precise way of examining the nodes at which the internet is being used can be achieved by grouping responses by sub-category. If all respondents are examined (figure 4), we see that EAs who have their own websites or use email are heavily concentrated in all categories involving merchant activities in Bangkok. Sixty-one percent of Bangkok merchants have a website, and sixty-six percent use email; forty-four percent of EAs who are both merchants and producers of silk in the Northeast have a website, and sixty-six percent use email. This stands in sharp contrast to the dearth of websites run by Northeastern merchants (five percent use email) and the low level of internet use amongst Northeastern producers (seven percent of whom operate a website and seventeen percent of whom use email). It is interesting to note that among the group of EAs who are both merchants and producers in the Northeast, internet use rose substantially compared to other merchants and producers outside of Bangkok (twenty-one percent had a website and thirty-two percent used email).

Figure 4: Internet Use of all Survey Respondents



Total # of respondents: 173

Figure 5: Internet Use of ‘Thai Silk Sellers’



Total # of respondents: 126

If only the ‘Thai Silk Sellers’ group is examined¹² (Figure 5), a similar pattern can be observed. Nineteen and twenty-nine percent of Bangkok merchants in this group respectively have websites and use email. The proportion of internet users rises substantially if Bangkok merchants who also produce silk in the Northeast are examined (thirty-eight percent have websites and sixty-three percent use email). Merchants, producers, and self-employed weavers in the Northeast all have extremely low levels of internet use, but again, EAs who are both merchants and producers in the Northeast display a significant amount of internet usage (fifteen percent have a website and twenty-seven percent use email). Internet usage within this group is thus at a level quite similar to usage among Bangkok merchants.

3.5 Overcoming Geographic Obstacles

From the sample in the Northeast, only two producers and six merchants who are also producers have websites, while a total of fifteen producers, merchants, or some combination of the two use email (out of the total sample of 173 respondents). Given the widespread poverty and lack of literacy in Thai, English, and computer technologies in the Northeast, it is perhaps unsurprising that internet usage often only enters the commodity chains of Thai silk after silk leaves the region.

While the bulk of websites that sell Thai silk are located in Thailand, a significant proportion is also based outside of the country. Interestingly, most websites based outside Thailand are not situated in large urban centres. This fact in many ways supports the common claim that the internet drastically diminishes the importance of geography. These silk sellers are keenly aware that the internet allows them to sell anything from anywhere. The manager of silkofsiam.com, for example, explained in an interview that:

I don't have to be located here. The military took me here, and I left the military to earn my doctorate. And as my location does not matter, I just stayed here [California].

The idea that the internet allows sellers to overcome geographic obstacles was similarly expressed by other online sellers. Connie, the director of a website based in Florida, stated:

My business is totally based on the internet. If it were not for the internet I would not have a business, we sell through the internet worldwide. My business is based in Florida because we live here, but we have built this business this way so we can move and have it anywhere in the world.

It is conceivable that the ability to use the internet to sell anything to anyone from anywhere has led a number of EAs who sell silk from outside of Thailand to do so as a second career. The manager of [Worldesigns](http://Worldesigns.com) describes his situation:

I am a full-time academic and AIDS researcher so this can only be done from home via the internet.

However, it remains the case that most websites selling Thai silk are run from within the borders of Thailand. In fact, because the searches for websites that sell Thai silk were not

¹² Again, in order to examine the data without ‘Internet Adopters’ who were included in the sample for the sole reason that they use the Internet.

performed using Thai script, it is conceivable that the number of non-Thai sites is somewhat overrepresented in the sample used in this study.

3.6 Bangkok as an Internet Hub

The data reviewed earlier clearly show that within Thailand, Bangkok is the primary location for internet usage in the silk industry. As almost all Thai silk is produced in the Northeastern provinces, it is merchants that are based in Thailand's primary city that perhaps feel the greatest need to gain a foothold on the internet. Categorizing the data by sub-groups confirms this fact. Like respondents who solely regard themselves as merchants, the category of silk merchants who also produce silk in the Northeast displays a high level of internet usage for business purposes. Unfortunately, it is difficult to arrive at a precise description of how this sub-group tends to organise and operate within commodity chains. Some of these EAs are undoubtedly large companies that save costs by occupying a range of positions along commodity chains. Others, however, perform more of a coordinating role by contracting with a fixed group of weavers and supplying them with raw materials.

The results displayed in figures 7 and 8 offer supportive, albeit non-conclusive evidence that EAs with control over multiple nodes in the commodity chain are more likely than smaller firms or small-scale producers to integrate the internet into their commodity chains. Firms in category ('b','c') [firms that are simultaneously merchants and producers in the Northeast] display a much higher level of internet usage than any other Northeastern-based group. It was not possible to locate a single member of sub-group 'b' (Northeastern merchants) that had a website. Firms in category ('a','c') [firms that produce in the Northeast and act as merchants in Bangkok], similarly, are more likely to have a website than other producers in the Northeast, but at the same time are less likely to have a website than Bangkok-based merchants who do not produce silk (sub-category ['a']). These data, however, do not speak to the size of the firms or their productive abilities. In order to obtain a more comprehensive overview of the ways that not only location, but also the size of firms is associated with internet-usage, the following section briefly discusses those linkages.

3.7 Firm Size

Two survey questions were included to measure firm size. Respondents were asked to reveal their approximate annual turnover in addition to the number of workers that they employ. Unfortunately only fifty eight (out of a potential one hundred and seventy three) respondents provided information about their annual turnover, consequently rendering any potential descriptive statistics rather meaningless. The response rate to the question about workers was somewhat higher. Slightly over half of respondents (ninety-five) revealed the number of administrative, clerical, or sales workers that they employ, while one hundred twenty-one EAs were willing to state how many production workers they managed. The following analysis must therefore be regarded with an appropriate amount of caution.

The mean number of administrative/clerical/sales workers at all firms that do not use websites is 3.3, while the same statistic for firms that do use the internet is 13.3. Looking only at firms that produce silk (i.e. excluding sub-categories 'a' and 'b'), the mean number of production workers at companies that do not use the internet is 38.8, whereas at firms that use the internet, the mean is 44.4. It therefore does seem that it is larger firms, rather than firms with a smaller number of employees, that are more likely to use the internet.

3.8 Summary

The aim behind this section has been to examine the nodes and locations at which the internet is being used in the Thai silk industry. The work presented here has demonstrated that Bangkok-based and foreign merchants, large firms, and firms with control over multiple

nodes in the production chain are more likely than small firms or Northeastern firms that are either producers or merchants to use the internet.

These findings imply that few of the theoretical potentials of the internet are being realised within the context of the Thai silk industry. EAs located outside of Thailand have harnessed the internet to escape the spatial constraints that are inherent to selling Thai silk (i.e. having to be physically close to either producers or consumers), and appear to be using the internet to redefine their global positionalities. These foreign merchants, however, are the exception rather than the rule.

Northeastern producers have, for the most part, been unable to establish cyberpresence, and it is merchants located primarily in Bangkok who have instead positioned themselves as virtual bridges in the buying and selling of silk. It is conceivable that proximity to markets (in terms of an EA's position on a commodity chain) plays a factor in encouraging Bangkok merchants to create websites, as they adapt to the needs or desires of their customers. Firm size is also a potential factor behind internet adoption, with larger firms likely having more resources to create a website. However, irrespective of what the specific factors behind internet adoption are, the fact remains that the internet is clearly not flattening space for most producers of silk in the Northeast of Thailand.

4. ALTERED CHAINS

The previous section demonstrated that most producers and merchants do not use the internet. In a general sense, then, the internet is not making a large impact on the Thai silk industry. But, this does not mean that the internet is not the source of genuine change at the sites of implementation. The rest of this paper therefore asks: how has the introduction of the internet altered commodity chains and the flows of capital in the Thai silk industry?

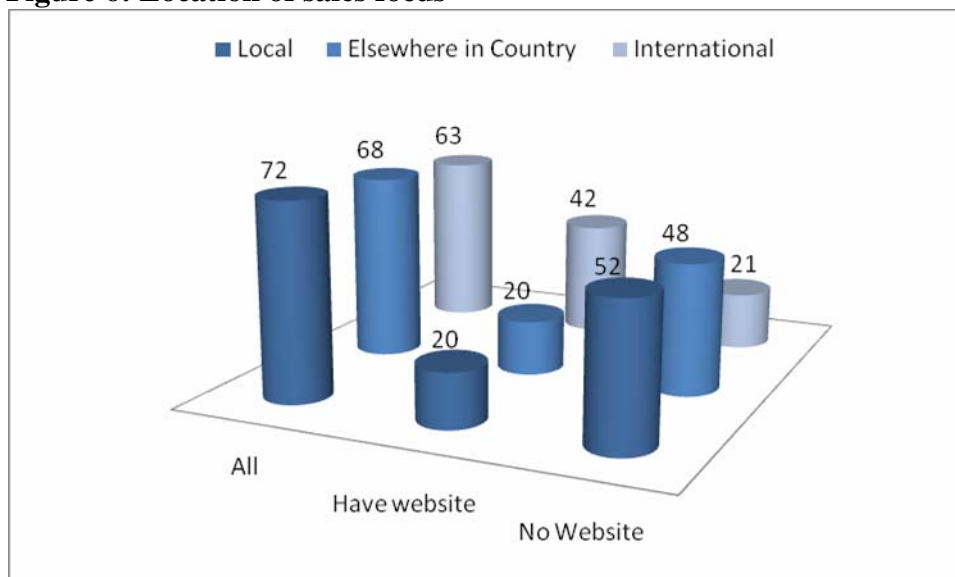
In line with much of the development literature about the potentials of the internet, this research project was designed with an assumption that the internet would be a catalyst behind disintermediations of commodity chains. As such, it was hypothesised that the opening up of virtual conduits through the introduction of the internet will in most cases shorten, or disintermediate, the overall production chain. This hypothesis will be addressed by looking at some of the significant differences between producers and merchants who use the internet and those who do not. The following sections first examine geographic differences in chains and proceed to look at topological differences in chains.

4.1 Internet and Distant Customers

An oft repeated claim is that the internet, by reducing the importance of physical distance, enables EAs to increase the range at which they are able to effectively sell their products (c.f. Freund & Weinhold, 2004; Porter, 2001). This claim is examined in two ways: by looking at the locations of each EA's three most important customers, and by analyzing the self-reported geographic focus of each EA.

All survey respondents¹³ were asked, "Who do you predominantly try to sell to?" and given the following options for response: local customers, customers elsewhere in your country, international customers, and other. Respondents were instructed to select all responses that apply (i.e. more than one choice could be selected). The graph below (figure 6) illustrates responses to this question. In the sample of all survey respondents, EAs with websites are far more likely to sell to international customers than those without websites. Precisely two thirds of EAs who state that they predominantly sell to international customers have websites, while only twenty-eight percent of EAs who focus on local sales and twenty-nine percent of EAs who focus on national sales have a cyber presence.

¹³ Those who completed survey either online or in person.

Figure 6: Location of sales focus

It is conceivable that an EA's position within a commodity chain has a significant effect on the location of sales focus. That is, businesses that primarily sell to end consumers (as opposed to other companies) might be expected to have a more local focus. However, when the dataset is divided into EAs who state that they primarily sell to end-customers and EAs who primarily sell to other companies, no significant change in results is evident. In both cases, an equivalent number of respondents focus on local, national, and international customers. Again, in both cases, slightly over two-thirds of those that focus on international customers have a web presence, while only about a quarter of EAs with a local or national focus operate a website. The only exception is that forty-six percent of EAs who primarily sell to end-consumers and focus on customers elsewhere in their country have a website.

In general, then, EAs with websites are likely to have a strong focus on international sales. But the data alone do not imply that use of the internet is a causal force behind producers and merchants reaching out to international customers. The desire to add efficiency into existing export relationships may instead be a driving factor behind internet adoption by EAs focusing on international sales.

The above findings are given further support by a related question on the survey. Respondents were asked to list, with as much precision as possible, the locations of their top-three customers. Figure 7 displays this information from all respondents in Thailand who noted that they focus on international customers, while figure 8 contains information from all respondents in Thailand. Both figures display the data using percentages instead of raw counts.

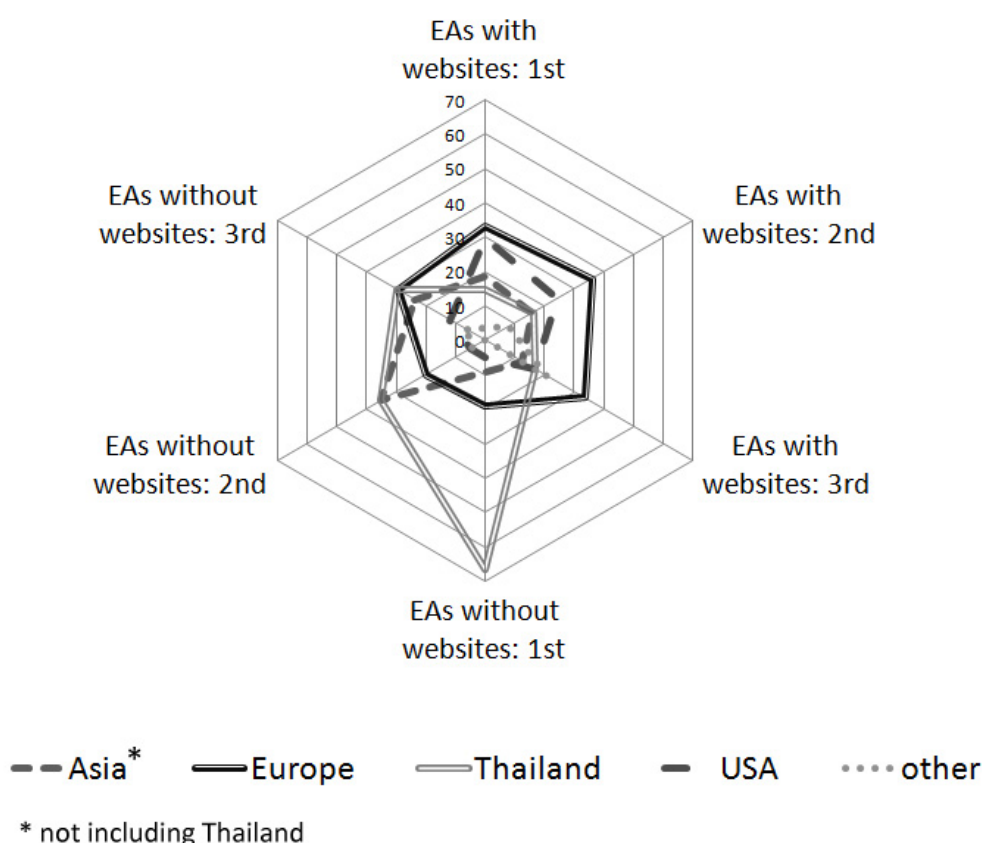
Some interesting patterns emerge in the data from respondents who state that they focus on international customers. The most salient point is that customers in Thailand are the most important customer group for many EAs who state that they focus on international customers. It is unclear why this discrepancy exists. A possibility is that an EA has a few Thai customers who order large amounts of silk, and a large number of international customers who order small amounts. Such a scenario would explain why customers in Thailand are listed with such frequency as their top-three customers by respondents who state that they have an international focus. However, in all of my interviews, not one producer or merchant described a significant discrepancy in the locations of customers based on the volume of their orders. A more likely explanation is that these producers and merchants focus their attention primarily on international sales despite the fact that the domestic market

provides them with the bulk of their revenue. It is even more striking that this phenomenon is most visible in EAs that do not have websites. This is a strong indication that producers and merchants without websites are faced with difficulties when trying to reach an international market.

Looking at only the three axes that display EAs with websites, the percentage of important customers located in Thailand drops significantly. European customers are the largest group, followed by Americans, and then by Asians in all three categories. An unforeseen finding is that American customers are almost exclusively present in the top-three lists of producers and merchants that have websites. Although there is a noticeable drop, Europeans can still be found in the lists of EAs that do not sell silk using a website, while (non-Thai) Asian customers are actually somewhat more prevalent in the top-three lists of producers and merchants without websites.

When EAs that focus on local and national customers are added to the chart (figure 8), the differences between EAs that do and do not have websites become even clearer. Customers in Thailand are undoubtedly the most important customers for the vast majority of producers and merchants without websites. However, when looking at EAs with websites, although Thailand-based customers remain more important than customers from any other single region, non-Thai customers remain a majority in the top-three rankings.

Figure 7: Location of “Top-Three” Customers among EAs in Thailand who Indicate that they Focus on International Customers



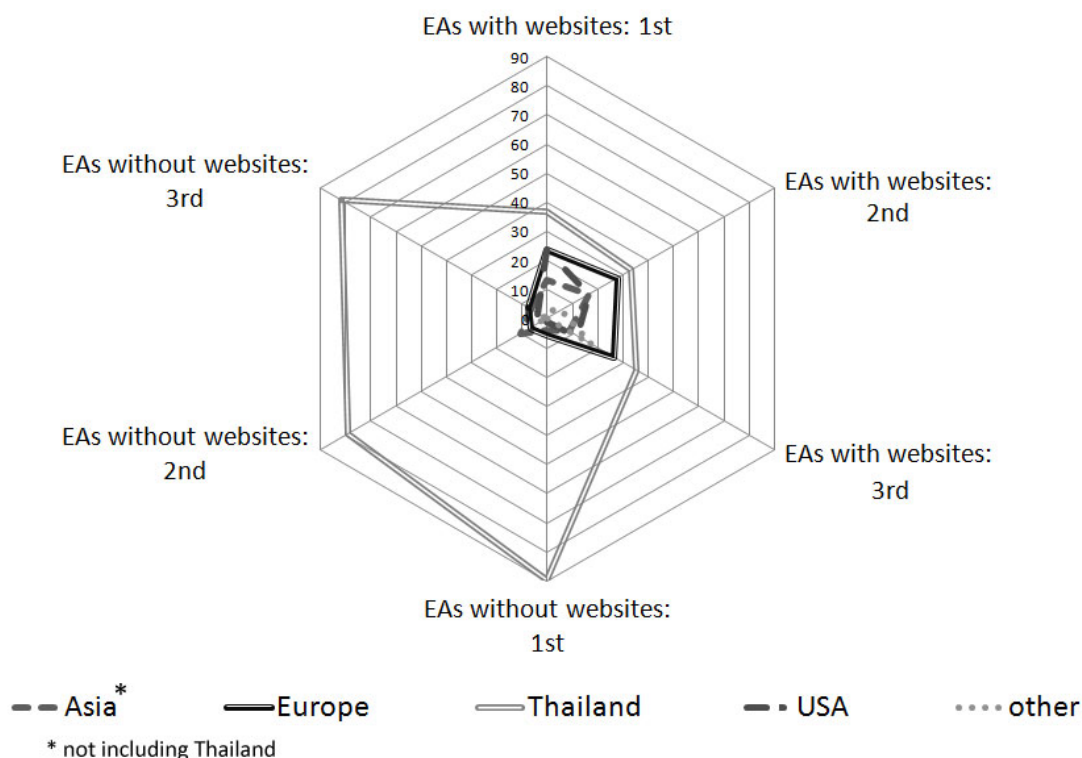
Key: Each axis measures the percentage of responses¹⁴ that fall within each of the regions listed in the legend. The number following each axis label indicates which “top-three”

¹⁴ Responses to the question: “For your top three customers, where is each customer’s location (region and country)?”

customer to which the axis refers. For example, “EAs without websites: 2nd” counts the percentage of customers from each region who are second in the “top-three” customers category amongst EAs without websites.

These diagrams clearly illustrate that there is a relationship between the use of a website and the locations of important customers. Specifically, amongst producers and merchants who do not have websites, there is actually a distance-decay pattern that can be seen: Thai customers are by far the most important, followed by customers elsewhere in Asia. No such statement can be made about producers or merchants that use websites, as their important customers are far more geographically dispersed.

Figure 8: Location of “Top-Three” Customers among all EAs in Thailand



Key: Each axis measures the percentage of responses that fall within each region. The number following each axis label indicates which “top-three” customer the axis is referring to. For example, “EAs without websites: 2nd” counts the percentage of customers from each continent who are rated second in the “top-three” customers category amongst EAs without websites.

Again, these data provide no absolute proof that the internet causes EAs to spatially extend their sales foci, as many of the producers and merchants surveyed that now have important international customers might have had those same customers before they operated a website. These results do however make two clear geographical points. Namely, the internet is assisting producers and merchants that sell internationally, while it is highly unlikely for those without websites to sell internationally. However, while the relationships between operating a website and geographical reach are clear, there has not yet been any discussion on links between internet usage and commodity chain topology. The following section will address this issue.

4.2 Internet and Reconfigured Chains

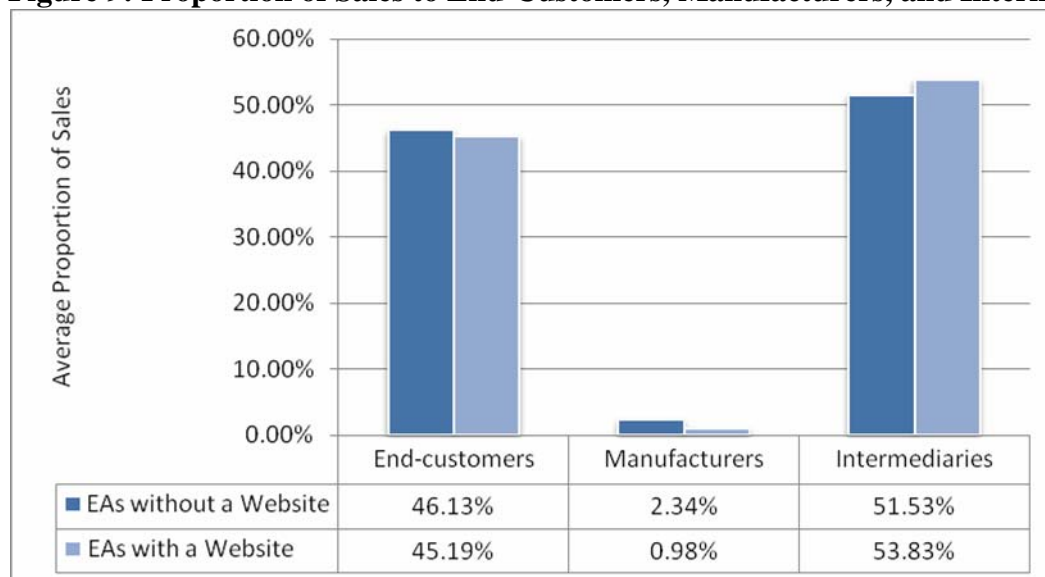
All survey respondents were asked to approximate the type of customers who buy their silk. They were given the options of 'individual customers', 'retailers', 'wholesalers', and 'other' and asked to specify the proportion of their sales to each group. Figure 9 separates the responses to this question into two groups: EAs that sell using a website, and EAs that do not. The graph illustrates the mean proportion of sales to three distinct groups: 'end-consumers', 'manufacturers', and 'intermediaries'.

When compared to EAs that sell silk with the assistance of a website, EAs that do not have a website sell a surprisingly similar amount of their silk to end-customers, manufacturers, and intermediaries. So although internet usage is clearly related to the geography of customers, Figure 12 demonstrates that having a website has a negligible effect on immediately proximate commodity chain positions. Or in other words, one of the most significant claims about the transformational power of the internet is not being realised: namely, producers and merchants with websites are, in general, not bypassing intermediaries.

Because this finding stands in contrast to much commentary on the potentials and promises of the internet, the results displayed in figure 9 deserve closer scrutiny. Ignoring manufacturers¹⁵, the coefficients of variation in all cases hover between sixty and eighty percent (see table 4)¹⁶. These statistics indicate that while the data do display aggregated similarities, a considerable amount of variation remains within each distribution. An examination of skewness reveals that both the distribution of percentages in the category of EAs without a website selling to end-customers and the distribution of percentages in the category of EAs with a website selling to end-customers are slightly positively skewed. On the other hand, the distributions of both types of EAs selling to intermediaries are slightly negatively skewed. What this means is that a number of respondents who sell all or most of their silk to end-customers are skewing the distribution towards a higher mean. Conversely, a number of respondents who sell little or none of their silk to intermediaries are negatively skewing the distribution of EAs with websites that sell to retailers or wholesalers towards a low mean. The negative kurtosis values in each category indicate relatively flat distributions. Or put another way, there are not any significant clusters of values in each distribution. So, this means that the averages in table 1 are made less representative of each distribution by the diversity of responses rather than skewed clusters of answers.

¹⁵ The very small proportion of EAs that sell to manufacturers render many of the statistics in the *manufacturers* column meaningless.

¹⁶ The coefficient of variation is calculated as: (standard deviation/mean)*100.

Figure 9: Proportion of Sales to End-Customers, Manufacturers, and Intermediaries

Total # of respondents: 47 with a website and 106 without a website.

The similarities in the proportion of sales to end-customers versus intermediaries by EAs that do and do not use websites therefore masks a meaningful amount of variation in the commodity chain positions of those EAs. Nonetheless, were the internet to have a significant effect on the commodity chain position of silk producers and merchants, one would expect to see much larger differences in the average proportion of silk sold to end-consumers and intermediaries.

Table 4: Descriptive Characteristics, Organised by Sales to End-Customers, Manufacturers, and Intermediaries

	EAs without a Website			EAs with a Website		
	<i>end-customers</i>	<i>manufacturers</i>	<i>intermediaries</i>	<i>end-customers</i>	<i>manufacturers</i>	<i>intermediaries</i>
Mean	46.132	2.340	51.528	45.191	0.979	53.830
Standard deviation	32.431	13.282	32.518	36.110	6.710	35.868
Coefficient of variation	70.300	567.707	63.107	79.903	685.565	66.633
Skewness	0.176	6.211	-0.095	0.280	6.856	-0.217
Kurtosis	-1.184	39.612	-1.179	-1.509	47.000	-1.507

A potential source of bias originates from one of the main findings of the previous section. Internet users are far more likely than EAs that do not use the internet to be intermediaries. It therefore stands to reason that the dissimilar composition of commodity chain positionalities in each category could have an effect on the above results. This bias could be avoided by examining the outputs of each specific sub-group separately (i.e. only internet users that are Bangkok merchants, only producers in the Northeast who do not use the internet, etc.). However, breaking down the sample into increasingly smaller categories results in most sub-groups possessing extremely low populations. It is nonetheless revealing to look at the two categories with the largest sample sizes: Bangkok merchants and Northeastern producers.

Figures 10 and 11 demonstrate that the topologies of commodity chains vary substantially between Bangkok merchants and Northeastern producers (i.e. merchants are

more likely than producers to sell a lot of silk to end-customers). However, in both cases, it is remarkable that so little difference exists between internet users and EAs without websites in the proportion of sales to end-customers versus intermediaries. While the small sample sizes are certainly a reason to judge this finding with caution, the fact that the dataset as a whole displays the same pattern (figure 9) is reason to believe that use of the internet is having no noticeable effect on commodity chain topology. In other words there is no convincing evidence that the internet is allowing producers or merchants to bypass intermediaries in order to topologically shorten commodity chains.

Figure 10: Proportion of Sales by Bangkok Merchants

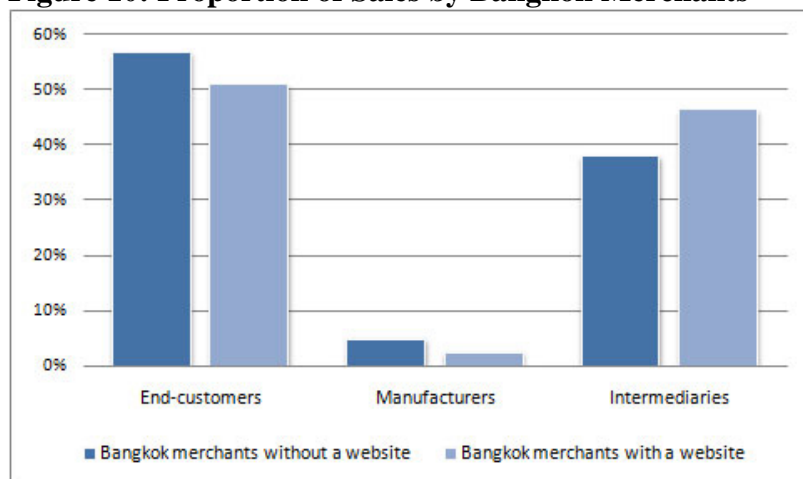
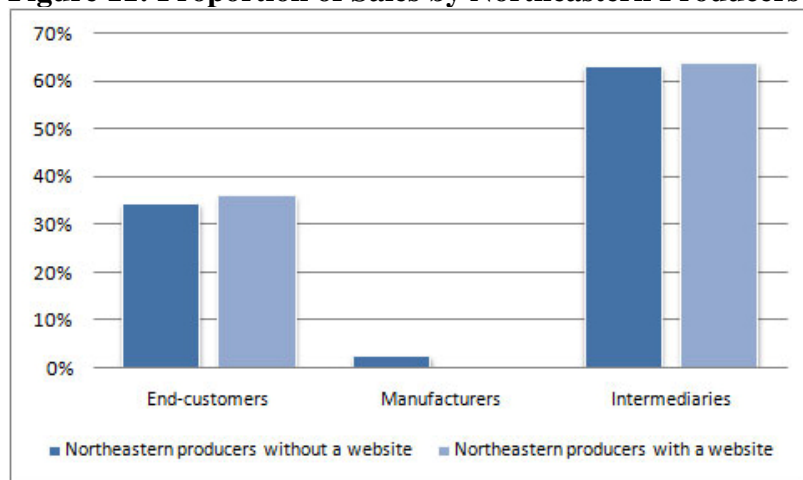


Figure 11: Proportion of Sales by Northeastern Producers



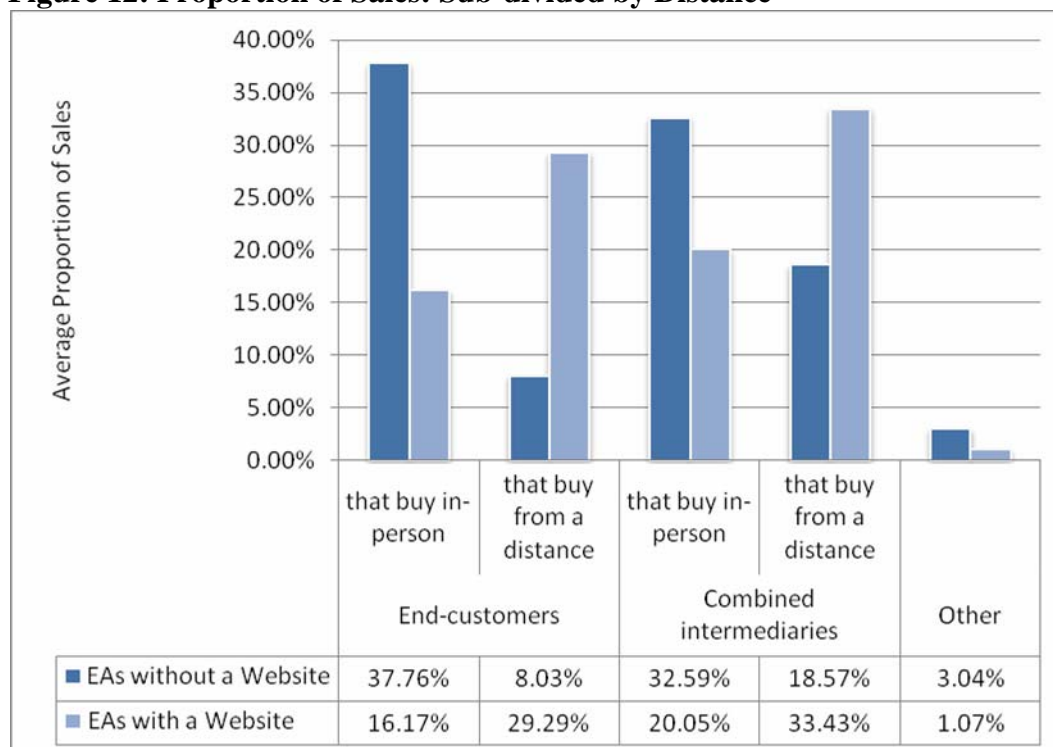
Notes: Northeastern producers include Northeastern producers who also act as merchants. The Y axis indicates the average proportion of sales to each category. Total numbers of respondents are as follows: Bangkok merchants without a website (16), Bangkok merchants with a website (18), Northeastern producers without a website (50), Northeastern producers with a website (7).

4.3 Geographic and Topological Characteristics of Sales

Even though the internet may not be having any noticeable effect on commodity chain topologies, important differences between internet users and non-internet users can be observed when end-customers and intermediaries are sub-divided into two distinct geographical groups. In addition to detailing the percentage of their sales going to individuals, retailers, and wholesalers, survey respondents were asked in subsequent

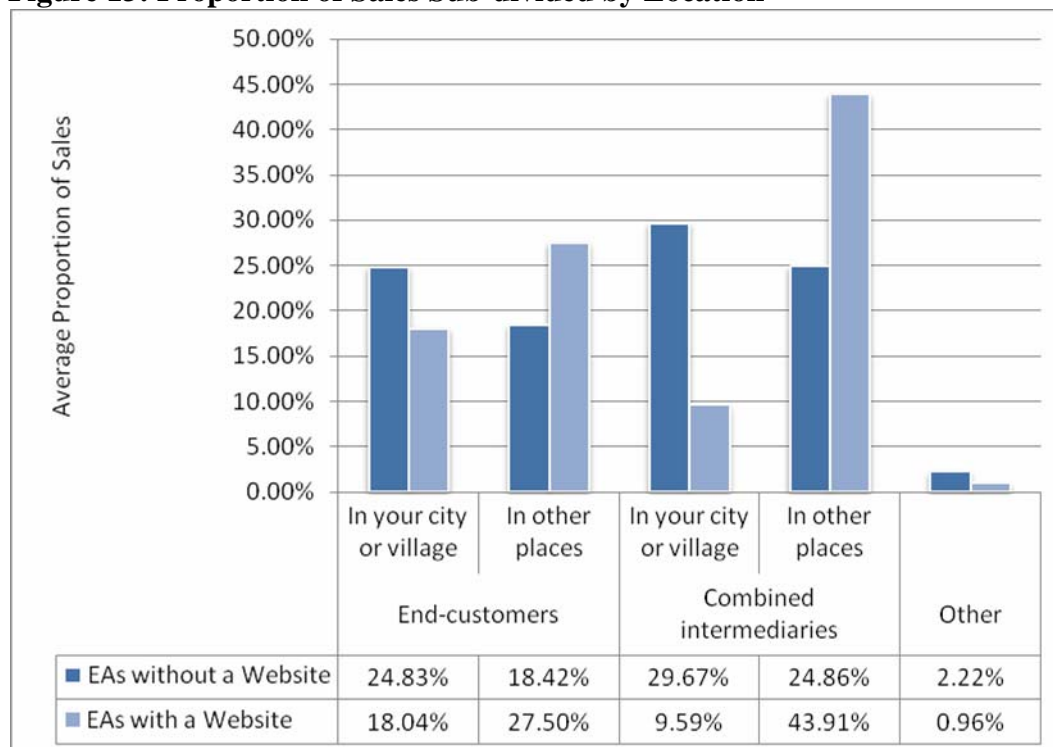
questions to specify two additional details: the proportion of each group that buys in person versus from a distance (Figure 12), and the proportion of each group that is based locally (Figure 13).

Figure 12: Proportion of Sales: Sub-divided by Distance



Total # of respondents: 42 with a website and 103 without a website. Note: This graph displays the mean proportion of sales to end-customers, combined-intermediaries, and other EAs. "Combined-intermediaries" refers to sales to both retailers and wholesalers.

Some of the starkest differences between EAs that have websites and EAs that do not can be observed in figure 15. EAs that have websites are far more likely than producers or merchants without websites to sell a large percentage of their silk to customers (both end-consumers and intermediaries) that buy through a non-proximate transaction (i.e. not face-to-face). Figure 16 reinforces this point by highlighting the fact that internet users are far more likely to sell a large portion of their silk to end-consumers or intermediaries in other towns or cities. Particularly in the case of selling to intermediaries, EAs with websites (in contrast to those that do not use the internet) are particularly unlikely to sell locally. This result is somewhat predictable and reinforces the idea that the internet is allowing EAs with websites to expand their geographic reach. However, it is interesting to note that while the internet in theory allows all producers and merchants with websites to sell directly to distant end-consumers, EAs with websites remain instead much more reliant on sales to distant intermediaries.

Figure 13: Proportion of Sales Sub-divided by Location

Total # of respondents: 46 with a website and 96 without a website.

5. CONCLUSIONS

Becoming visible to non-proximate customers is a crucial step for any producer or intermediary wanting to sell internationally, and this paper has demonstrated who has and has not been able to achieve this visibility online. The first section of the paper demonstrated that large firms and firms with control over multiple nodes in the production chain are more likely than small firms or northeastern¹⁷ firms that are either producers or merchants to use the internet, with Bangkok merchants remaining the single largest group of internet users.

The internet is also rarely creating virtual marketplaces that are able to disintermediate commodity chains. Producers and merchants who use the internet often see no noticeable change in the topological length of their commodity chains; in fact, firms that use the internet are equally or more likely than those that do not to sell silk to intermediaries and are more likely to buy silk from intermediaries. Instances in which the internet is being used to shorten commodity chains are simply exceptions and not representative of common experiences with the internet. This is not to say that the internet has no geographical effects: internet users are more likely to sell both non-locally and non-proximately. In some ways, then, the internet is altering the manner in which distance is experienced by firms in the Thai silk industry. Absolute distance is made less relevant and less of a barrier for firms with cyber-presence.

This finding indicates that although becoming visible to non-proximate customers is a crucial step to altering the customer-base of a firm, visibility is not a determinant of altered commodity chains. Although intermediaries have been able to use their changed visibility to interact with foreign merchants, the internet has in very few cases allowed either intermediaries or producers to share virtual markets with buyers further downstream in the commodity chain. That is, the internet has not brought about the mass disintermediation that it was predicted to. While the internet may have sparked a governance shift towards market

¹⁷ i.e. the region in which most Thai silk is produced.

or modular types of governance in buyer-driven chains in global textile industries (Gereffi, 2001; Gereffi & Memedovic, 2003; Porter, 2001), it has neither lessened the importance of intermediaries in the Thai silk industry or shown that disintermediation is ever likely to occur. Even though the space-transcending properties of the internet can allow producers and merchants to peer through the fog of distance and can potentially bring about greater transparency (and visibility) in a commodity chain, those potentials have rarely been realised.

The most frequent users of the internet (the majority of whom are either Bangkok-based or foreign intermediaries) are those topologically furthest from the nodes of production. These internet users are often using the internet not to forge new topological linkages with unfamiliar nodes, but rather to ease the movement of silk through the highly intermediated chains that it needs to traverse as it moves from producer to consumer. Most interesting is the fact that chain topology is more of a barrier than physical distance to internet users. Internet adopters can use the internet to open up connections between themselves and distant customers: jumping over all in-between places. But, most are rarely able to use the space altering properties of the internet to use the internet as a tool of development to circumnavigate intermediaries in commodity chains.

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