

Chapter 7

Conclusion

“It all depends upon us, that special class of technology elite, the computer, communication and information scientists living near the end of this century. We must be brave enough to be critical of our developments and speak out on how they are to be used.”
(Ngwenyama, 1998, p 8)

This thesis has demonstrated how distinct societal contexts, particularly as defined by governmental privacy regulations, are likely to affect the diffusion of retail LBS. This chapter concludes this study by reviewing the context, frameworks, statistical data, and legislative policies that have informed this study:

How will societal context, particularly privacy regulations, affect the diffusion of retail LBS differently in the United States and Germany.

The problem statement was researched and answered in the following manner: first, the context of location-based services (LBSs) was examined, paying specific attention to location technologies and the development of LBSs; second, the importance of societal context and human elements in technological diffusion, as well as diffusion itself, was reviewed; third, statistical data about mobile phones (the vectors of retail LBS diffusion) were collected and analyzed; next, interviews and surveys were conducted of experts in the field of LBS to better understand the future development of retail LBS; and finally, American and German privacy regulations were compared and contrasted to determine if they are likely to act as barriers or promoters for retail LBS growth. The rest of this chapter will provide a brief summary of the analysis from earlier chapters, a discussion of and answer to the problem statement, an overview of likely implications of German and American policies for the potential adoption of retail LBS, and suggest avenues for further study, as retail LBS becomes a more widely available reality.

In setting the stage for retail LBS, it was necessary to first understand the technological context of LBSs: how they work – with specific reference to the location technologies – and how they initially developed. Chapter 2 has shown that location technologies already allow an individual to be geographically located through the use of a mobile phone (Adams *et al.*, 2003; Bossert, 2002; D'Roza and Bilchev, 2003; Millar, 2003; Salmon, 2003). Accuracy rates differ, however, depending on the particular technologies adopted (Table 2.1). Differences were also noted in the characteristics, development, and use of LBSs in the United States and Europe. While the United States initially launched the E911 service, a government mandated LBS (D'Roza and Bilchev, 2003; Gum and Proietti, 2002; Salmon, 2003), Europe has been concentrating on the development of business and consumer LBSs due to market demand (Goldman, 2003; Moss, 2003).

These distinctions in the development and use of LBSs between the US and Europe clearly demonstrate that the *technological* context is already affecting the potential direction of LBS growth. Although a comprehensive overview of technological differences between the US and EU is necessary to facilitate understanding of the potential diffusion of retail LBS, this thesis also showed that the tangible elements of technology are not the sole factors affecting the growth and adoption of retail LBS. Social informatics was used to frame the important distinction between physical aspects and human aspects of technology and its use.

The distinct societal contexts of the US and Germany have proven vital in affecting the diffusion and adoption of retail LBS. Social informatics, a perspective which examines the often paradoxical effects of technologies within different contexts (Kling, 1999; Sawyer and Rosenbaum, 2000; Sawyer and Tapia, 2002), clearly established that human aspects of society will affect the diffusion of any technology, including retail LBS. A technology's political qualities and non-neutrality (Cockburn, 1999; Sawyer and Rosenbaum, 2000; Sawyer and Tapia, 2002; Winner, 1999) will affect social responses to, and thus innovation and diffusion of, retail LBS technology to create 'winners' and 'losers' (Sawyer and Rosenbaum, 2000). Social responses, however, are tied to culture and societal context, and therefore would lead us to expect that retail LBS will be received differently in distinct contexts. This is consistent with survey responses; all but two respondents asserted that culture would affect the potential diffusion of retail LBS.

Geographic theories of technology diffusion were reviewed in Chapter 3. Among major contributors in this field, Hägerstrand, Brown, and Rogers, all mentioned aspects of societal context as significant. Brown discusses the marketing infrastructure perspective, which maintains that diffusion agencies within a geographical context affect the diffusion of an innovation (Brown, 1981). Rogers also notes that an innovation's social environment is a key component in the diffusion process (Rogers, 1995). After reviewing both the technological and societal contexts of LBS as well as the diffusion process, Chapter 4 examined the methodology used in this study. Chapter 5 discussed vectors of diffusion of retail LBS.

The most natural vector for the diffusion of retail LBS is the mobile phone. The mobile phone's proliferation in both US and German societies was illustrated through the use of statistical data from the OECD, CTIA, and the Research Room (CTIA, 2003b; OECD, 2003b; The Research Room, 2003c). In comparing data, both from recent years and forecasts, Germany is some years ahead of the US in the percentage of people with mobile phones (Figure 4.1 and Figure 4.2). Having established that the diffusion vector for retail LBS is more widely adopted in Germany, however, only illustrates the country's high potential in terms of tangible technology – as already discussed, only half of the equation involved in retail LBS diffusion. One must again, take societal context into account.

Despite the higher proliferation of mobile phones in Germany as compared to the US, there are many elements that may act as barriers or promoters to the diffusion of retail LBS. Barriers or promoters of retail LBS diffusion exist in both geographies. This part of the thesis focused on current privacy regulations in the US and Germany as a pivotal influential element of societal context. In the US, no clear overarching political regulations concerning the privacy of location information exist, despite the fact that industry associations and technological interest groups are attempting to take on the responsibility (CDT, 2004a; CTIA, 2003a; EFF, 2003; EPIC, 2004). The US's self-regulatory environment allows industries to decide how to manage citizen's private information that they hold (Bagby, 2003; White, 1997). Perhaps paradoxically, this ambiguous legal environment appears likely to create a *barrier* for the diffusion and adoption of retail LBS in US society, rather than to promote diffusion as might be expected of limited privacy legislation. Ironically, the FCC declined to create stricter rules concerning location information so as *not* to act as a barrier to LBSs. As stated by one interviewee, businesses in the US are more concerned with the privacy issues than Europe, partially because they are "gearing up" for the deployment of LBS (Interviewee-2, 2003). Yet, due to citizens' concerns about privacy, corporations are also wary of launching technological retail LBS applications in an uncertain regulatory environment (Interviewee-2, 2003; Nelson and Rendleman, 2001). The same assertion regarding citizens' concerns about privacy with LBS was made by 25 of 29 survey respondents.

Such apprehension among potential retail LBS users is likely to slow, perhaps even halt, retail LBS diffusion in the US, in turn providing little or no incentive for industries to heavily invest in retail LBS's development at this time.

In contrast, Germany's robust privacy regulations make for a more stable legal environment (Bagby, 2003; White, 1997), ideal for the diffusion and adoption of retail LBS. Along with the implementation of EU privacy directives (European Commission, 1995, 2000b, 2002b), Germany has had a long history of protecting its citizens' personal information. German privacy protection comes in the form of its Basic Law, the Federal Data Protection Act, and the right to self-determination of disclosure and use of personal data (Bundesbeauftragten für den Datenschutz, 2004b; Deutscher Bundestag, 1949; European Foundation, 2004b). This stable and secure landscape acts as a potential *promoter* of retail LBS diffusion. The EU has already endorsed the deployment of consumer-oriented LBSs, and due to preexisting policies protecting consumer proprietary information, concerns about privacy issues are much reduced relative to the US (Interviewee-2, 2003). Citizens, knowing that protection of their personal information is clearly affirmed through legislation, seem to be more willing to utilize new technologies without the fear of compromising their privacy. This same speculation was made by a survey respondent who wrote, "I would imagine that a government-controlled or sponsored use of LBS [...] would be accepted in an easier fashion than [in] countries like the US." Comparing this effect on the potential of retail LBS diffusion with the more lenient US regulatory environment relates to an interesting and ongoing debate - how does government regulation affect capitalist economic development? While not applicable to the developed nations of the US and Germany, this issue suggests the potential importance of regulatory frameworks in global economic development.

The political nature of technology thereby creating 'winners' and 'losers' (Sawyer and Rosenbaum, 2000) has already been established, and can now be applied specifically to the diffusion and development of retail LBS technology within the US and Germany. Assuming that retail LBS technology is a positive technological development (which may be a matter of opinion) and from a purely business and technological standpoint, the obvious 'winners' are German mobile telecommunications and LBS industries. This was

illustrated in chapters 2 and 5, which demonstrated Germany's current use of consumer-oriented LBSs and high number of diffusion vectors. Still, these statistics do not solely determine 'winners' and 'losers.' From the societal context standpoint, the 'winners' and 'losers' are determined by government privacy regulations. 'Winners' in this context are German citizens whose personal information is protected and who feel secure enough by their government-mandated rights to utilize retail LBS. 'Losers,' i.e. US citizens, are those whose privacy would be compromised due to legislative leniency. Hence, the scenario noted earlier in this study related to "[s]ending coupons for 50% off a coffee to wireless users as they walk past Starbucks is something that is not going to take off" (VanderMeer, 2002b, p 38) as this type of marketing is "too intrusive" (VanderMeer, 2002b, p 38). This idea however, demonstrates a societal distinction as some cultures may be more apt to utilize such a service while not finding it invasive, while other societies may not like such 'intrusive' push marketing.

Thus, it has been shown that privacy regulations will have a major effect on the potential diffusion and adoption of retail LBS, although in the opposite sense to what might have been expected. Paradoxically, greater privacy regulations seem likely to promote the diffusion of retail LBS. Many survey respondents and interviewees asserted that concerns over privacy and protection of personal information, much less geographic location, will be a barrier to retail LBS adoption. Thus it appears that, contrary to conventional wisdom, more is less – establishing more government regulations to protect citizens' private information may in fact promote the diffusion of retail LBS by reducing barriers to both business and consumer fears over its adoption.

Though extremely important, privacy is not the only barrier for the potential diffusion of retail LBS; it also depends on the value people place on their privacy, an aspect governed by culture. Though the effect of culture on retail LBS diffusion was addressed by questions within the survey, due to the limited scope of this thesis these survey responses went unused, but offer insight for further study. Future inquiries might therefore focus on cultural attitudes to privacy and its effect on the diffusion and adoption of technologies, in addition to exploring the ethics of direct marketing. Moreover, further

study of the social implications surrounding location technologies and services, such as issues of profiling, tracking, and surveillance, will be extremely valuable.

The surprisingly slow diffusion of LBSs in the US, a market with few restrictions on corporate responsibility with consumer information, can be related to cultural lag theory, as discussed in Chapter 3. This theory hypothesizes that governments often lag behind technological development and must therefore *reactively* regulate (Ogburn, 1964), which appears to be true in the case of the US. The evidence brought together in this research, as well as from the interviews and surveys conducted, demonstrate that the US, not Germany, is suffering from cultural lag in the case of retail LBS. Cultural lag theory does not work to explain the case of Germany due to their *preemptive* regulatory environment. The German government has already enacted legislation concerning the access and use of wireless location data, doing so well before the technology advanced to the point of compromising individual rights to privacy.

These conclusions about retail LBS technology may seem paradoxical, as is mentioned in the social informatics framework. Being that the US has more lenient regulations, one would believe that companies would take advantage of the situation and utilize a wireless user's location information for the purposes of retail LBS. However, the relaxed privacy regulations cause people to be wary of such a service, leading to caution among LBS promoters. It seems therefore, that the US "[s]ociety will look to self-regulations and privacy law to resolve the challenges as technologies advance in the collection, archiving, analysis, and distribution of private information" (Bagby, 2003, p 442). On the other hand, precisely *because* Germany has legislatively preempted concerns about privacy, citizens feel more secure in subscribing to a new technology.

While no statistics and guaranteed forecasts of retail LBS diffusion can be established from this thesis, it can be determined that political regulations concerning privacy *will* affect the diffusion and adoption of retail LBS. Such an effect is specific to the study considered here, and will vary with societal context, so that generalization is difficult, but in this comparative case study an analysis of the regulatory environment in both the US and Germany suggests that Germany offers a more stable and secure environment for the diffusion and adoption of retail LBS.