Mobile and Internet Communication: Privacy Risks for Youth in Bangladesh

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This article looks into the privacy perception and vulnerability among Bangladeshi urban youth using mobile and computing devices. Based on a survey it shows a significant number of the youths are unaware about the concept of privacy in the 'Digital Age' and also has little or no idea about possible risks relating to shared voice and data communications. Amid the absence of any clear-cut privacy framework at the national level, this article has found that the level of trust on existing mobile telephony to be significantly higher than the Internet. This research concluded that the long term user experience (or absence of it) in mobile phone and Internet do not have any impact on Bangladeshi youths' perception on possible privacy related vulnerabilities. Concern over data manipulation has also been identified a major influential factor in deciding youth's online behavioral patterns.

Keywords : Privacy, vulnerability, youths, Bangladesh, mobile communication, internet

Global experiences show, ICT interventions among youths provide limitless communication opportunities, in terms of both voice and data (Dowding, 2011; Movius, 2009). These two communication tools empowered the young people in their self discovery and in awareness building (Basat, 2010). Despite such great strengths of mobile and Internet applications, the Privacy International (2009) reported the possible threat to these technology users' privacy, which is yet to receive significant attention in many developing countries.

Bangladesh, as a densely populated emerging South Asian nation is no exception. A very large number of youth, who constitute one-third of the country's total 154 million populations, are ready to join or already part of the national workforce. A significant part of them are heavily investing on ICT-centric (mainly mobile based communications options) infrastructure. Unfortunately, societal safeguards to ensure and protect the privacy of the

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increasing number of digital communication users are not in place. The young Bangladeshi users have limited or no awareness about the possible risks involved with rapid information sharing (Nabil, 2012). And to make things even more challenging, there is no cohesive legal system available to guarantee privacy and security of the digital communication users (Hussain, 2011). Identifying the primary issues relating to privacy, level of vulnerability and related risks within this new and dynamic domain in Bangladesh seems to be very crucial.

This study is an effort to capture the youths' perception on the overall privacy risks in data sharing and the level of trust they place on the communication service providers. It deals with the perception of young population on the concept of privacy or the absence of it, both online and offline, using mobile and Internet communications from a survey with 301 urban youths in three major cities across Bangladesh. Providing an overview about the telecommunication industry of the country, this article describes some relevant background literature on privacy, technology, and society. Afterwards it presents the research questions, describes the method, and analyses findings.

Telecommunication in Bangladesh

There are around 90 million active access paths of telecommunications in Bangladesh. In addition, the majority of the 31 million Internet users in this country are being connected via mobile phones (Ericsson, 2012). The price of accessing mobile phone services in Bangladesh is at present one of the lowest in the world. Nokia Siemens Network study (2009) reported as quoted by Hussain (2011) Bangladesh has the third lowest total cost of ownership (TCO) per month with US\$8. Bangladesh Telecommunications Company Ltd. (BTCL) is the key player in this sector (872,000 of the 1.03 million fixed subscribers) is largely considered to be a sunset industry. According to the Bangladesh Telecommunications Regulatory Commission (BTRC) the government awarded 40 IP Telephony licenses but most of the IP Telephony providers are yet to roll out their services and the few who did are concentrating on the corporate sector (BTRC, 2012).

Mobile and the internet

Mobile phone providers are the leading entity in Bangladeshi telecommunication. At present, all the providers except one among six operators are using GSM technology (2G) for voice and data communication. BTRC (2012) record shows the Grameen Phone (GP) is the market leader (42%), followed by Banglalink (28%), Robi (20%), Airtel (7%), Citycell (CDMA carrier 2%), and Teletalk (the government incumbent 1%). BTRC (2012) record also shows that 20% of the total population is using the Internet. 95% of the active Internet connection is through mobile phone providers. In addition, there are private Internet Service Providers (ISPs: 101 national and 138 zonal) and two WiMax service providers.

Policy and regulatory environment

With background ingrained historically in the British-era laws on communications, the legal and regulatory framework of Bangladesh's telecommunication sector is primarily based on the National Telecommunication Policy of 1998, the National ICT Policy of 2002, the International Long Distance Telecommunication Services (ILDTS) Policy 2007 and 2010,

and Bangladesh Telecommunications Act (BTA) of 2001 (amended in 2010). The telecom regulator, BTRC was established in 2002, based on the provision created in BTA 2001. Under this Act, BTRC emerged as the main regulator with the responsibility to oversee the license issuance, renewal, spectrum allocation, and tariff regulations (Hussain, 2011). However, the amended BTA of 2010 made the Ministry of Post and Telecommunications (MoPT) as the final decision making body on licensing, tariff, and policy related issues. BTRC largely became an important, but auxiliary entity in the telecom regulatory sector. But till now, no policy making or regulatory entity has worked on any law or issued any official directives or formulate any policies that protect the privacy of the Bangladeshi citizens, who are using the telecommunications more than ever in the country's history.

Society and Privacy in the Age of Digital Communication

The famous definition of privacy as the right 'to be let alone' emerged with the development of the camera and its use by tabloid media in the late 19th century (Basat, 2010). Later concerns appeared as governments began listening to private communications over telegraph and telephone lines. The protection of privacy can be seen as a security opportunity. Movius (2009) opined that when the personal information of a state's citizens is protected, the security of that nation is enhanced. And the inverse applies equally - when the personal information of a citizenry is poorly protected, that nation and its economy are at risk. He claimed, "Identity fraud and other types of fraud have grown dramatically in recent years, as has the abuse of personal information by criminals" (2009: 211). Similarly, selling peoples' information related to online purchasing history, travel preferences, food habits, etc. to third party entities without prior consent expose another dimension of privacy violations by the communication service providers. Such problems are acute with youth globally (Musiani, 2011). Therefore, it seems that the relationship between mobile, the Internet, people and the society are complex and dynamic.

Studies (Dowding, 2011; Walther, 2010; Livingstone, 2005) show that the advent of ICTs (mobile and Internet) is becoming imperative because of its multidimensional effects in personal and social lives. Explaining the participatory and multi-dimensional nature of ICT/ Telecommunication, Livingstone (2005) highlights four changes in the new media environments: Multiplication of personally owned media; Diversifying in form and contents; Convergent forms of information services; and Interactive communication between medium and user. These changes help in distinguishing between the public and the private space. Since the advent of computing capabilities in 1960s, the northern countries have kept a close watch on privacy related implications in important societal issues. On the contrary, the policymakers and industry stakeholders of the south have not put yet adequate attention on privacy through mobile and the Internet. Similar to many other developing countries, the primary proliferation of ICT in Bangladesh has taken place predominantly through mobile communication.

The cases of using mobile phone and Internet to blackmail and defame youths have skyrocketed in Bangladesh over the last couple of years. The violators (in many cases they are very young) are usually using Short Message Service (SMS), Multimedia Message Service (MMS), and mobile photography to defame and exploit others. Young women are getting victimized more often with huge social repercussion. With no specific legal support structure in place to ensure a safer, interconnected society, risk of privacy violation has become a rather complex area of study in Bangladesh. Nabil (2012) recorded that Bangladesh has started witnessing a rise in ICT related privacy violations, mostly in the forms of unethical information sharing, blackmailing, and illegal distribution of personal audio/video clips through the Internet and mobile phone networks. According to the documented report, incidents where girls have been gang raped, video-taped (using mobile phone cameras), and later blackmailed to inhibit legal complaints (by the victims) and to extort money. There has been a growing practice of sharing intimate physical moments between couples and fiancés (generally videotaped without the knowledge or consent of both or at least one partner) in local porn sites. In many cases, such incidents forced the victims to commit suicides, as the society failed to provide any tangible support or safety net against such new variances of crime. Harassment using Facebook account with fake profile is another new phenomenon. Celebrities and women Facebook users are the main victim of such scams.

Not only in personal lives, young Bangladeshis are also being exploited by external elements in public via mobile phone network and the Internet. Bangladesh, a Muslim dominated nation is also a home to a large number of Buddhists, concentrated on its south-eastern districts of Cox's Bazaar (mainly in the sub-district of Ramu) and Chittagong. On September 29, 2012, hundreds of young, religious zealots attacked and burned down seven Buddhist Viharas (temples) in Ramu - some of which were more than a couple of centuries old. According to the official sources, the 'mass' got upset after supposedly seeing a Buddhist youth from Ramu being tagged in a Facebook image demeaning Quran, the holy book of the Muslims. ABC News (2012) reported that in the night of attacks, several politically motivated local Muslim leaders gathered around a local cyber cafe, and started marshalling people to protest such messages in the social networking site. The news claimed that the majority of these people were organized through SMS and mobile phone calls and vandalize, loot, and set fire in the major religious sanctuary of the local Buddhist population. The crucial part of this tragedy turned out to be the exploitation of a social networking site, and also the aptness in using mobile telephony to organize people for vandalism within a very short span of time. Later investigation by Manik (2012) found that some other people (third party) tagged this photo to the local Buddhist youth's Facebook account without knowledge of the original account holder. This kind of unauthorized intrudes or third party intervention to personal space makes the privacy concern as a crucial issue among youths in Bangladesh.

Research Questions

Incidents related to privacy violation through mobile and the Internet is however getting a minimal attention among the users and policymakers. As the new media has left privacy issue vulnerable, protecting it in the virtual space requires individuals to monitor and evaluate the related risks constantly. In order to better understand the privacy and the related usage risks an average Bangladeshi youth faces from mobile and Internet amid such volatile socio-economic backdrop, this study asks questions on issues related to the usage patterns of such technological tools for communication. The research explicitly differentiated between the traditional mobile phone services (voice call, SMS, MMS) and the Internet (accessing via a mobile phone or any other mobile/computing devices). At this stage of study, proposes the following research questions:

- RQ 1 : What is the perception level on safety for sharing private information through Mobile Phone/Internet for youth in Bangladesh?
- RQ 2 : How knowledgeable are the youth in Bangladesh about the Security of their information and Privacy via Mobile Phones and Internet?
- RQ 3 : How critical are the Bangladeshi youth regarding the potential manipulation of private information by any third party via Mobile Phone and Internet based services?
- RQ 4 : What would be the effect on youth's behavior having knowledge about third party intervention at their private space on Mobile Phone and Internet usage?

Method and Sample

This research is based on the quantitative approach combined with careful observation of youths' activities through ICTs in three major cities that have highest mobile and the Internet concentration across Bangladesh - Dhaka (the capital), Chittagong (the second largest city), and Rajshahi (the economic hub in the north-west). In terms of geographical and population spread, the areas in focus cover the north-west, central, and south-east parts of the country. Previous study (Rivera and Sreekumar 2012) on ICT use in Bangladesh have identified young ICT users to be primarily concentrated in education institutions and Internet cafes. Hence selective random and clustered sampling is used and the samples are evenly from the public and private universities, colleges (both boys and girls), and community cyber cafes. To generate information on youths' privacy concern, a survey consisting of 78 questions (28 on mobile phone, 41 on Internet privacy, and nine for general communication tools) was administered among 301 (171 male and 130 female) respondents during June and July 2011. The questionnaire was aimed to learn about respondents' personal ideas and thoughts on the safety of mobile and the Internet communication in the context of privacy concern. Feasibility of the preset variables and hypotheses were verified by Chi-square statistics ($\gamma 2$, df and P < .05 value).

The study sample consists of 57% male and 43% female aged between 15 and 26 years and key respondents (97%) are students. The age of 19-22 years old consists of 52.5%, 15-18 years are 30.9%, and 16.6%s are between 23-26 years old. Respondents usually spend between 300 and 700 (USD 5-7 approx) Bangladeshi Taka (BDT) for their mobile and Internet activities in a month. Majority of the respondents' (62.2%) family household income is between BDT 10,000 and 40,000. Among the respondents, 65.1% grew up in urban area, 24.6 % in rural area and 8% in sub-urban area; 63.1% of them are either pursuing university level education or have undergraduate degrees, while 15.9% have higher secondary level of education (12th grade) and the rest (17.9%) are at school level education. According to the respondents 38.5% have been using mobile phone for four and more years, followed by 25.2% for three years with an ownership of personal SIM 89.4%. The average daily spent time to mobile phone is less than an hour 65.1% followed by 14.0% between one to two hours for talking/oral conversation followed by social networking, email and video downloading. Most of the respondents have two different e-mail IDs (36.9%) followed by four IDs (15.9%) while 7.6% have five different e-mail IDs. Facebook has been found to be the most popular among all Internet connection sites (30.2%), Skype holds second position (22.9%), followed by Gmail (15.5%) and Yahoo (11%).

Findings

Perception on privacy vulnerability

Typically, oral culture plays a significant role in Bangladeshi society and it has reflected among the youths behavior too. A total of 79.2% respondent ranked face-to-face communication at top in the list while 42.3% opined that the key way of communication is mobile phone nowadays. Among the respondents 7.2% use Internet for correspondents mainly e-mails, 0.8% for social networking. An 8.3% mentioned land phone and 3.0% usages snail post as part of their communication activities. To find out their vulnerability perception within these communication options a question was run with a multiple answers.

Rating their privacy protection concern among these communication habits, a 52.1% relied on face-to-face communication (friend/peers/close relatives) as the most confidential means. The other tools followed by mobile phone (25.6%), Email (8.0%), social network (7.3%), hand-written letter (5.6%) and land phone (2.3%). Around 34% rated mobile as for medium level of privacy risk followed by Internet (28.2%) and social networking (23.9%). Detail in Table 1.

	Perceived Privacy Protection Rank						
Services	Very	High	Medium	Low	Very Low	No	
	High				_	Response	
Face-to-Face	52.1%	19.2%	22.2%	4.6%	1.9%	13.3%	
communication	(136)	(50)	(58)	(12)	(5)	(40)	
Mobile	25.6%	27.9%	33.9%	5.6%	1.3%	5.7%	
	(77)	(84)	(102)	(17)	(4)	(17)	
Internet (email)	8.0%	14.3%	28.2%	15.3%	9.6%	24.6%	
	(24)	(43)	(85)	(46)	(29)	(74)	
Internet (social	7.3%	10.3%	23.9%	13.3%	9.3%	35.9%	
networking)	(22)	(31)	(72)	(40)	(28)	(108)	
Letter	5.6%	6.0%	4.0%	14.3%	33.2%	36.9%	
(paper based)	(17)	(18)	(12)	(43)	(100)	(111)	
Land telephone	2.3%	7.3%	21.6%	12.3%	18.6%	37.8%	
	(7)	(22)	(65)	(37)	(56)	(113)	

Table 1: Perceived privacy protection by using different communication options

Knowledge and privacy vulnerability

There is a strong relation between the having personal information and lack of knowledge on privacy violation, it is believed widely. To know what the youths share through mobile and the Internet, a 27.6% respondent opined, they share photos and videos of their friends/peers and relatives without consent of the original owner, and 26.2% never shares. On social networking sites 35.9% do not realize that the service provider could get access to their personal information or interaction and pass those to third party without their permission. Respondents do not (47.5%) shares their photos and video with others, while 20.3% shares with friends and other third parties without consent by the owners of the clips and photos.

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A large group of young users (46.2% at individual level and 51.2% at the service provider level) admitted that they do not have any knowledge on the possibilities of unauthorized intrusion on confidential and private information by third party individuals or service providers without their permission in case of mobile communication. In case of Internet-based communication (e-mail and social networking) 47.5% do not think that other individuals go into their personal internet based social network. Similarly 35.9% also confess that service providers (Email/Facebook/Linkdin for example) do not get into their personal network unauthorized. Findings shows 36.2% have ideas about the possession and transmission of personal data by the mobile phone service providers while 24.6% aware that service providers restore their personal data and 38.2% do not have any idea that their information is stored and shared with third party without their prior consent (Table 2).

	Perceived Knowledge on unauthorized sharing					
Mode of	Individual level			Organizational level		
Communication	(Friends/ Relatives)			(Service providers)		
	Yes	No	No Idea	Yes	No	No Idea
Mobile phone	27.6%	26.2%	46.2%	36.2%	12.6%	51.2%
	(83)	(79)	(139)	(109)	(38)	(154)
Internet	20.3%	47.5%	32.2%	24.6%	35.9%	38.2%
	(61)	(143)	(97)	(74)	(108)	(115)

Table 2: Knowledge on unauthorized sharing of personal information

Concerns on manipulation of personal data

The survey data reveals that 78.1% (235) respondent share their confidential information via mobile phone with friends and relatives and 21.9% (66) does not share. Among shared information personal issues contain 41.5%, followed by education related information 22.3% and photos 2.0%. On the other hand 57.5% (173) does not share confidential information through Internet networking and 52.5% (128) shares. The combination of shared information is personal information 12.6%, education information 16.9% followed by photos 3.0%.

When the issue of third party intrusion comes into the forefront, what kind of reaction they expressed or what psychological motivation enforces them become important. Respondents expressed their concern almost equally (32.9 % in case of mobile and 32.2% for Internet/Social network) but at individual the level of their concern is the highest 37.4% (113). Some 27.8 % is moderately concern about this type of violation at individual level, 33.6% in case of mobile and 26.2% at Internet. Interestingly 12.6% respondents mentioned that storage of personal and private data by mobile service providers does not matter and 11.7% have opinion that any third party access in their information will not carry any value as they never share very private information with anybody via mobile or put information on social network and 3.3% have the same opinion in case of Internet service provider (Table 3).

Levels of concern	Mode of communication				
	Individuals	Mobile Phone	Internet/ Social Network		
Be very concerned	37.4% (113)	32.9% (99)	32.2% (97)		
Moderately concern	27.8%(83)	33.6% (101)	26.2% (79)		
Not very concerned	14.2%(43)	18.5% (55)	10.7 (32)		
Does not matter	11.7%(35)	12.6 % (39)	3.3% (10)		
No Response	8.9% (27)	2.3%(7)	27.6% (83)		
Total	100% (301)	100% (301)	100% (301)		

Table 3: Concern on third party storage private data/ information

Privacy threats and effects on ICT usage

The study looked into the reactions of the youth users after informing them the possibilities of 'third party sharing' of their personal information. It has been recorded that, with such knowledge, 21.3% individual favor for having an explanation from their friends/ peers and relatives about the unauthorized intrusion in their personal space and intend to know reason to share private data with others, 41.8 % will refrain sharing any private data with those people, 18.2% favor discontinuation of the relationship with these people. In context of mobile company/ service provider concerns, a 37.9% opined for asking an explanation, 21.3% would change the service provider, 14.6% would refrain sharing information in future and 9.6% favored to sue against them.

Internet users however were found to be quite worried. In case of such situation, 31.2% respondents mentioned that, if the record will be passed third party or unauthorized persons or companies they would ask necessary explanation to the service provider about the unauthentic discloser of their personal information to others and 12.0% said they would not share any personal information with the service providers in future, 9.6% will discard their service with the company if they would have noticed the matter of violation and 10.3% will sue against them. (Table 4)

Effects on behavior	Mode of communication			
	Individuals	Mobile Phone	Internet/ SN	
Ask for Explanation	21.3% (64)	37.9% (114)	31.2 %(94)	
Will not share anything in future	41.8% (126)	14.6% (44)	12.0% (36)	
Break the relationship/ Change the service providers	18.2% (55)	21.3% (64)	9.6% (29)	
Sue against them	5.1% (15)	9.6% (29)	10.3 (31)	
Does not matter	10.4% (31)	10.0% (30)	6.6% (20)	
No Response	3.2 % (10)	6.6% (20)	30.2% (91)	

Analysis and Discussion

The survey data finds that knowledge on new media (mobile and the Internet) usage is important in protecting privacy. Their views also determine that cell phone are comparatively secured mode of communication in comparison to the Internet for privacy matters. This belief has been further strengthened by the responding youth when a majority of them admitted to share their personal and confidential information via mobile network (78.1%) more comfortably. This percentage is relatively low (40.2%) in case of the Internet. The data also indicate, majority of the users are sharing their information via mobile phones (Table 1), but a significant portion of them (46.2%) really do not have any idea whether their personal data is re-shared, sold, or used by any individual (known or unknown) or by service providers (51.2%). Such perception is prevalent among majority of the phone users (87.4%), irrespective of their experience with the technology.

Respondents indicate that relatively matured (usage wise) mobile users are significantly less worried with the privacy related threats. In the Internet domain, it has been found that an experienced net user is more comfortable and more likely to share confidential information over the net than a relatively newer netizens. The fear of the unknown works significantly high among the large and new young users of the Internet (who are significantly more in number), as reflected in Table 1, where they considered the net to be less safe (medium 52.1%, low 28.6% and very low 19.1%) of the two mediums. Hence for both communication mediums the observation is that the experienced youths (with longer usage history) are more concerned with privacy related threats in case of mobile communication is not true. Chi-squire test result regret the observation with $\chi 2 = 5.409$, df = 10 and P < .862. However, when it comes about Internet the result has found a strong correlations between long time possession creates consciousness among users with $\chi 2 = 66.299$, df = 10 and P < .000). The omnipresence of mobile phone companies in public sphere perhaps has helped creating a pseudo-secured environment for the users. However, the same did not happen for the Internet based communications, mainly due to less prolific nature of Internet penetration in the country.

Responses to better understand whether the concerns regarding any third party data manipulation can result in less confidential information sharing by the Bangladeshi youths, for both cell phone and Internet usage. For cell phones, it has found that, irrespective of youths' reaction towards unauthorized information sharing, they are more likely to share private data. Chi-Square test does not found any significant associations of means, with $\chi 2=$ 6.791, df = 10, and P < .745). Youths' willingness to switch mobile service providers in the event of any privacy violation also reflects the users' eases with the availability of supply in the service industry (highly competitive voice telephony market with multiple providers). Findings on the Internet users, however, turned out to be different.

Majority of the Net users identified themselves to be very concerned with any possibility of third party unauthorized data sharing (Table-3). Similar behavioral pattern was reflected in the replies of Internet users too. The Chi-Square found this similarity to be statistically significant (with $\chi 2=72.575$, df = 6, and P < .000). As a result, it can be claim that knowledge on potential third party manipulation of private information negatively impacts youths' usage of mobile and Internet based services for confidential information sharing is valid for youths.

Based on these tests related to the perception and knowledge on privacy safety via new media it is evident that urban Bangladeshi youths have limited knowledge about the privacy related risks of their personal information via Mobile Phones and Internet. Similarly majority of them perceive communication via mobile phone more secured than communication via the Internet. There is also indication that youths with longer usage history are more concerned with privacy related threats in both mobile and Internet based communication but the knowledge on potential third party manipulation of private information will change youths' usage behavior of mobile and Internet.

Conclusion

The overall findings led to draw conclusion that youths in Bangladesh are still in the dark about the possible privacy related risks in digital communication, both in personal and public space. They also tend to trust any mode of communication based on external popularity and availability, and are still not capable enough to internalize the associated vulnerabilities. The main reasons behind the vulnerability of youth against privacy violations are general overconfidence and overreliance on mobile communication and the lack of knowledge about potential route of stored data (using any mobile phone's texting, messaging, browsing, photos, or video features) by the users. The limited exposure to the Internet, on the other hand, has made this medium to be perceived as a less secured way to communicate. However, longer usage history makes the young Bangladeshi netizens more knowledgeable, cautious, and reactive about the privacy related issues and data sharing, which does not matter for the mobile users, irrespective of their experience with the technology. Such sense of ease has resulted in the absence of urgency to enquire about the status of their shared information by both - people they know and the service providers.

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