
# Social Requirements for Designing Self-Adaptive Privacy Schemes in Cloud : The interrelation of Social Identity with self disclosure practices

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The research project was supported by the Hellenic Foundation for Research and Innovation (H.F.R.I.) under the '2nd Call for H.F.R.I. Research Projects to support Faculty Members & Researchers' (Project Number: 2550)

# Contents



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# Introduction

- Cloud services have significantly expanded in current society, transforming the way individuals and organizations store, access, and manage their data and applications
- Huge amount of information disclosure that alters users' personal information management
- Organizations and individuals should carefully evaluate their specific requirements and consider the appropriate privacy measures and service-level agreements when adopting cloud services
- The notion of **social identity** has been indicated as an important factor that **influences individuals' privacy preferences and concerns**

- Cloud services provide individuals with opportunities to express and project their social identities to others through profiles, content sharing, and interactions
- Different social groups may have varying attitudes towards self-presentation and self-disclosure practices

- The variety of attitudes within cloud services concerns privacy as well, such as prioritizing the protection of personal information or embracing a more open approach.

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# Introduction

- **Group norms** and the values associated with them can **shape members' privacy preferences** and may influence individuals' privacy management practices and decisions
- Privacy management, in this context, involves considering what information to disclose and how it aligns with individuals' social identity and desired impression
- Towards this, **self-adaptive privacy measures and techniques** have been indicated as an effective approach. *Self-adaptive privacy in cloud computing refers to the ability of cloud systems to dynamically adjust privacy measures based on specific requirements and preferences of individual users or organizations*

- Privacy management is changing based on users' social groups, several social factors and attributes, influencing the design, implementation, and acceptance of self-adaptive privacy mechanisms and practices.

- **Previous research indicates these factors are usually hard to be identified or are neglected during systems' design**

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# Research Questions and Methodology

This paper examines critical issues about users' social groups within cloud services related to their self-presentation and self-disclosure practices

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- RQ: Is belonging in a social group affecting users' self-presentation and self-disclosure practices?

- research population included the students of three Universities in Greece, England, and Spain: the University of the Aegean, the University of Bournemouth, and the University of Malaga
- An online structured questionnaire was developed
- The researchers opted for the Hellenic Statistical Authority's categorizations when determining the values for measuring users' socio-demographics
- Participants were asked to identify the groups to which they belong within cloud services
- validated metrics from previous studies on self-presentation and information disclosure were incorporated

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# Results

- The collected data was processed using SPSS28
- 280 valid responses

- The survey involved more women than men
- Despite the distribution of ages, the majority was in the age group of 18–32.
- Regarding family structure, the nuclear form dominates
- Most of the participants held a Master's diploma, and 92% of the respondents have professional experience of at least 1-5 years.
- The majority declared a relatively low monthly income, ranging from 301 to 800€.

| | *Sample Socio-Demographics* | |
|---|---|---|
| | *Value* | *Percentage%* |
| ***Gender*** | Male | 37.5% |
| | Female | 61.8% |
| | Other | 0.7% |
| ***Age*** | 18-32 | 58.9% |
| | 33-47 | 28.6% |
| | >48 | 12.1% |
| ***Family Form*** | Nuclear Family | 61.8% |
| | Large Family | 7.5% |
| | Single-Parent Family | 11.8% |
| | Other Form | 9.3% |
| | Prefer not answering | 9.3% |
| ***Educational Level*** | ICD4 | 36.8% |
| | Bachelor | 23.2% |
| | MSc | 35.7% |
| | PhD | 3.6% |
| ***Professional Experience*** | 1 to 5 | 43.6% |
| | 6 to 10 | 17.5% |
| | 11 to 15 | 9.6% |
| | 16 to 20 | 8.9% |
| | 21 to 25 | 6.4% |
| | >26 | 5.7% |
| ***Monthly Income*** | 301–800€ | 40.7% |
| | 801–1000€ | 16.1% |
| | 1001–1500€ | 20.7% |
| | 1501–2000€ | 6.1% |
| | 2001–3000€ | 3.2% |

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# Results

- The findings of our survey indicate that participants declare belonging to various social groups when adopting cloud services.
- The chi-square test for two nominal dichotomous variables was used
- Most of the associations were revealed for users' self-presentation and information disclosure practices on Messenger (25 associations) and Instagram (22 associations), less on Facebook (15 associations) and few (1-2) on What's Up and Google services.

| SELF-PRESENTATION AND INFORMATION DISCLOSURE | | |
|---|---|---|
| **Groups** | ***Disclosure Practices*** | **Media & Services** ***Instagram, Messenger, Facebook Google services, What's up*** |
| ***Companionship*** | personal information | ***Messenger:*** $X^2(1)=6.844$, p=0.009, $\varphi_c=0.157$ |
| | photos of myself | ***Instagram:*** $X^2(1)=11.024$, p=0.001, $\varphi_c=0.200$ |
| | | ***Messenger:*** $X^2(1)=6.517$, p=0.011, $\varphi_c=0.154$ |
| | about my friends | ***Messenger:*** $X^2(1)=3.957$, p=0.047, $\varphi_c=0.120$ |
| | about my job | ***Messenger:*** $X^2(1)=5.227$, p=0.022, $\varphi_c=0.138$ |
| | about my hobbies | ***Instagram:*** $X^2(1)=10.663$, p=0.001, $\varphi_c=0.197$ |
| | | ***Messenger:*** $X^2(1)=5.632$, p=0.018, $\varphi_c=0.143$ |
| | about my daily activities | ***Instagram:*** $X^2(1)=10.115$, p=0.001, $\varphi_c=0.191$ |
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| ***Professional*** | about my job | ***Messenger:*** $X^2(1)=7.917$, p=0.005, $\varphi_c=0.169$ |
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| | about my friends | ***Facebook:*** $X^2(1)=3.936$, p=0.047, $\varphi_c=0.119$ |
| | about my job | ***Messenger:*** $X^2(1)=6.415$, p=0.011, $\varphi_c=0.152$ |
| | about my hobbies | ***Facebook:*** $X^2(1)=8.561$, p=0.003, $\varphi_c=0.176$ |
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| ***Trade union*** | photos of myself | ***Instagram:*** $X^2(1)=4.502$, p=0.034, $\varphi_c=-0.128$ |
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| | | ***Instagram:*** $X^2(1)=5.633$, p=0.018, $\varphi_c=-0.143$ |
| | my location | ***Instagram:*** $X^2(1)=7.107$, p=0.008, $\varphi_c=-0.160$ |
| | I tag others in the photos I share | ***Instagram:*** $X^2(1)=8.209$, p=0.004, $\varphi_c=-0.172$ |
| ***Gender equality*** | personal information | ***Messenger:*** $X^2(1)=4.871$, p=0.027, $\varphi_c=0.133$ |
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| ***Voluntary*** | photos of myself | ***Instagram:*** $X^2(1)=4.410$, p=0.036, $\varphi_c=-0.126$ |
| | | ***What's up:*** $X^2(1)=4.226$, p=0.040, $\varphi_c=0.124$ |
| | about my job | ***Facebook:*** $X^2(1)=8.503$, p=0.004, $\varphi_c=0.176$ |
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| | I tag others in the photos I share | ***Facebook:*** $X^2(1)=4.268$, p=0.039, $\varphi_c=0.124$ |
| ***Sport*** | personal information | ***Messenger:*** $X^2(1)=4.467$, p=0.035, $\varphi_c=0.127$ |
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| | about my hobbies | ***Facebook:*** $X^2(1)=5.774$, p=0.016, $\varphi_c=0.145$ |
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| | my daily activities | ***Messenger:*** $X^2(1)=5.480$, p=0.019, $\varphi_c=0.141$ |
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| | about my sexuality | ***Messenger:*** $X^2(1)=11.908$, p=0.001, $\varphi_c=0.208$ |
| | religious views | ***Messenger:*** $X^2(1)=9.344$, p=0.002, $\varphi_c=0.184$ |
| | about my political views | ***Messenger:*** $X^2(1)=8.041$, p=0.005, $\varphi_c=0.171$ |
| | my location | ***Messenger:*** $X^2(1)=8.671$, p=0.003, $\varphi_c=0.177$ |
| | contact information | ***Instagram:*** $X^2(1)=3.863$, p=0.049, $\varphi_c=-0.118$ |
| | | ***Messenger:*** $X^2(1)=3.888$, p=0.049, $\varphi_c=0.119$ |
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| ***Environmental*** | personal information | ***Messenger:*** $X^2(1)=4.182$, p=0.041, $\varphi_c=-0.123$ |
| ***Human Support*** | photos of myself | ***Facebook:*** $X^2(1)=7.492$, p=0.007, $\varphi_c=0.164$ |
| ***Technological Interest*** | photos of myself | ***Instagram:*** $X^2(1)=8.102$, p=0.004, $\varphi_c=-0.171$ |
| | about my hobbies | ***Instagram:*** $X^2(1)=4.825$, p=0.028, $\varphi_c=-0.132$ |
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# Results

- The majority of associations were positive with the exception of fifteen (15) negative revealed in the case of participating in specific types of groups (mainly trade-union, professional, technological interest, scientific, voluntary, cultural, environmental) and for specific social media, mostly Instagram and less Messenger.
- Although the negative associations refer to nine (9) different practices, more negative associations were revealed for practices including photos sharing and for practices referring to hobbies and daily activities information.
- those participating in companionship groups use more self-disclosure practices compared to others participating in other type of groups,. Results also revealed that the self-presentation practices more used (or avoided) by people according to the type of group they belong, and the media context, were that of sharing information about hobbies (12 associations, 3 of them negative) and photos sharing of oneself (9 associations, 3 of them negative).

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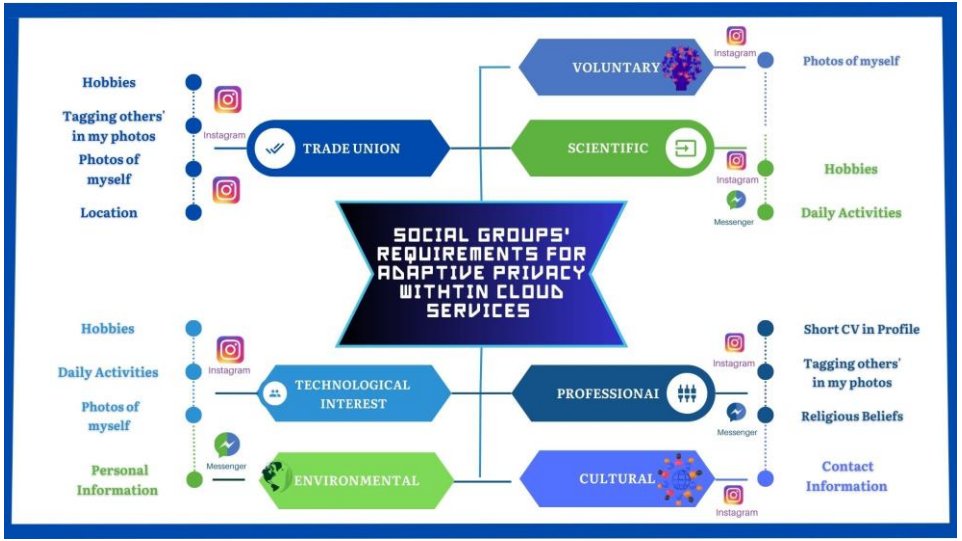
# Discussion and Future Directions

- **Social belonging** in a group affects users' self-disclosure practices and respectively influences their privacy preferences
- Users who share a similar social identity based on companionship, feel more comfortable disclosing personal information and photos within cloud services and particularly within social media
- other users emphasizing mostly the professional based ones, and downplaying the others, declared to be mindful of their social identity presentation, considering the potential consequences and impacts on their privacy, well-being, and relationships

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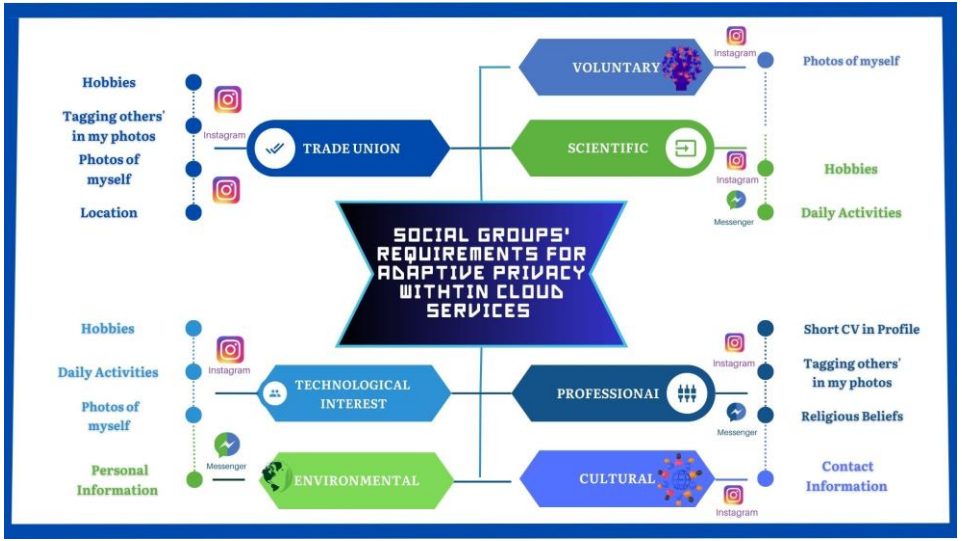
- Since Self-adaptive privacy in cloud services seeks to strike a balance between data utility and privacy protection, by tailoring privacy measures to users' needs and dynamically adapting to changing circumstances
- users' empowerment can be enhanced when self-adaptive privacy schemes from the beginning of the design take into account groups preferences
- Incorporating the understanding of social groups' self-disclosure practices into the concept of "privacy by design" methodologies, such as the extended PriS framework for cloud computing services that should be used for designing self-adaptive privacy schemes, can help ensure that privacy considerations are embedded in the development process of cloud services.
- Therefore, users will be provided with control and agency over their information and with respect to their individual privacy preferences, reducing the risk of unintentional oversharing or undersharing

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# Thank you for your attention!

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