



ITU Kaleidoscope 2014

Living in a converged world - impossible without standards?

**A CROSS-COUNTRY COMPARISON ON
USER ACCEPTANCE OF
MULTIMEDIA CLOUD SERVICES
- GERMANY AND JAPAN -**

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Background

- Multimedia cloud services (MCS) have become increasingly popular & wide spread
 - Sharing of rich multimedia contents and making non-verbal (non- linguistic) communication
- Enhanced convenience for users through seamless linkage of various services
 - Various cloud services can be utilized with a single login and password
- Concerns from increased service integration
 - Resulting from difference from media literacy or linkage with other information
 - Privacy for user behaviors and utilization possibility of Big data

Issues about MCS: Privacy

User Behaviors

- Indiscreet posting of information lead to leakage of personal information and scandals
- Aggregation and linkage of various information in the MCS can lead to generating new “value”

Possibility of Utilization for Big data

- Various data sources aggregated in the MCS are expected to be analyzed and effectively utilized for business
- While general users have fear that privacy and leakage of personal information, so they might avoid utilizing their own “big data”

Big Data utilization and personal data

Personal data utilization and distribution

- Personal data utilization has made rapid progress in various areas in Japan and other countries

Personal data may be utilized without causing privacy infringement problems

- The disclosure of personal data to relevant persons
- The obtainment of consent from specific persons for the use of their personal data
- The appropriately implemented use of anonymity technologies

“White Paper of Information and communication in Japan 2013,”

Big Data utilization and personal data: Japan-EU Collaboration for Internet Policies

- The European Commission proposed new data protection rules
 - Urging both Japan and EU industries to take new measures to address this issue
- The deliberation of an international framework corresponding to the social environment is required for the handling of personal information
 - To prepare and implement policies that ensure an appropriate balance between personal data protection and the free flow of information in both Japan and the EU

“Aiming to Strengthen Japan-EU Collaboration for Internet Policies”, Nov. 15, 2012, Keidanren

MCS are Global Services

Borderless Services

- To connect various countries and regions, MCS are deployed all over the world
- Same services platform are used, while legal system and social system will be different from country to country and region to region

Variety among users

- Users having a variety of the values and cultural background in their use of MCS
- These are incentives for the MCS, but may also become the cause of clash between users

The purpose of this study 1

To clarify user acceptance and usage behavior for the MCS

- Users have anxiety of privacy utilization on the Internet and networked world
- User's privacy awareness affect behavior when using MCS and potential use of big data services
- We need to analyze how the users' privacy awareness influenced the users' behavior to utilize MCS

The purpose of this study 2

Multimedia cloud service for global service

- Same services platform are used across the world in the MCS
- Privacy protection is low and user's privacy awareness varies among countries
- We need to analyze how user's privacy awareness actually influences utilization of MCS and the differences between countries

Theoretical Framework: TAM (Technology Acceptance Model)

- To analyze how the users' privacy awareness influenced usage behavior of MCS, we use TAM framework
 - A model is established with the perceived usefulness, the perceived ease-of-use, the social identity the self- disclosure, the privacy awareness, the external perceived locus of causality (PLOC), the internal PLOC
- Constructed hypotheses and research model based on TAM
- Conducted web-based questionnaire surveys with general users(total 1,000) in Germany and Japan

Our Hypotheses

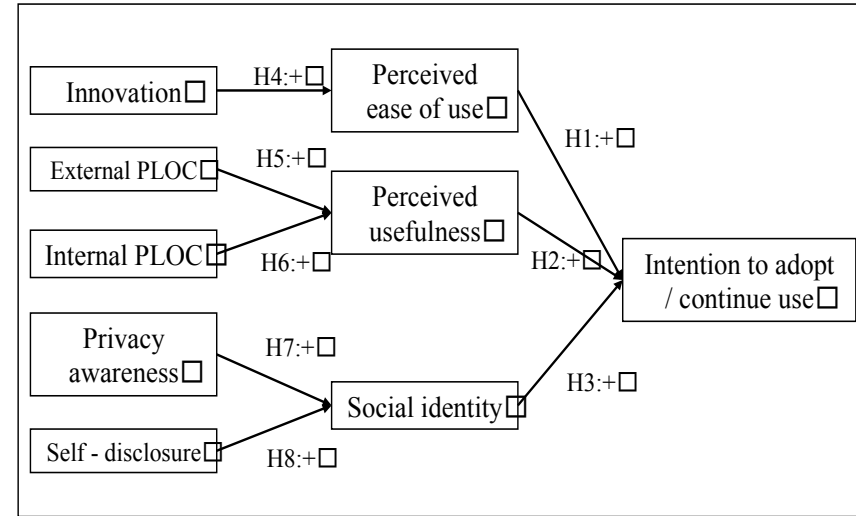
1. The perceived ease of use positively influences the user's intentions
2. The perceived usefulness positively influences the user's intentions
3. The social identity positively influences the user's intentions
4. The innovation positively influences the perceived ease of use
5. The external PLOC positively influences the perceived usefulness
6. The internal PLOC positively influences the perceived usefulness
7. The privacy awareness positively influences the user's intentions
8. The self-disclosure positively influences the user's intentions

Our Research Model, Data Collection Procedure and Method of Hypothesis Testing

- Assessed the convergent validity of our items on the basis of three criteria (Cronbach's α , etc.)

- All factors exceed each three criteria's standards in both of Germany and Japan

- Tested the hypotheses in our model by using PLS-SEM (Partial Least Squares – Structural Equation Modeling)
 - We estimated the significance of the parameter estimates using bootstrapping with $n = 5,000$ samples



Result of Path Analysis

Pass	Sample	
	Germany Sample Path Coefficient	Japanese Sample Path Coefficient
H1 Perceived ease of use -> Users' intentions	0.24 ^{***}	0.09
H2 Perceived usefulness -> Users' intentions	0.14 ^{***}	0.14 ^{***}
H3 Social identity -> Users' intentions	0.46 ^{***}	0.62 ^{***}
H4 Innovation -> Perceived ease of use	0.33 ^{***}	0.46 ^{***}
H5 External PLOC -> Perceived usefulness	0.10	0.15
H6 Internal PLOC -> Perceived usefulness	0.60 ^{***}	0.53 ^{***}
H7 Privacy awareness -> Social identity	0.26 ^{***}	0.16 ^{***}
H8 Self - disclosure -> Social identity	0.64 ^{***}	0.70 ^{***}

Significance levels: ***p < .01. **p < .05.

Summary of Path Analysis

- All hypotheses are supported by results, except for the following:
 - H1 (the perceived ease of use would positively influence the user's intention) for Japanese sample
 - H5 (External PLOC would positively influence the perceived usefulness) for German and Japanese samples
- The users' privacy awareness does influence formation of the social identity, but not the use of MCS
 - The user's utilization of MCS might not be directly constrained by the privacy awareness
 - User's' privacy awareness and behavior positively affects the social identity for interactions within own social group

Discussion 1

- User has multi-social identities and is playing multi-personas
 - If there are perception gaps of personas, this could become one of the causes of privacy related issues.
 - Recently emerged new MCSs makes these privacy related issues more serious and complex
- Therefore it becomes more essential to grasp the current status of service usages
 - To discuss how we can fill interpersonal and international gaps for utilizing social media

Discussion 2

- We are facing a lot of issues to be solved, for example:
 - 1) How to make adjustment of privacy protection mechanisms across borders
 - 2) How to draft recommendations or guidelines for safer and more privacy aware utilizations of MCSs
 - 3) How to standardize related technologies or share information on potential privacy protection technologies for safer service operations of MCS
- In order to solve the above issues, we expect the ITU to take initiative and lead the discussion.