

TRUST AND PRIVACY IN ONLINE SOCIAL NETWORKS: FIRST EMPIRICAL RESULTS

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Subject & Definition



Online Social Networks (OSNs) are online environments where people ...



1. ...present themselves through individual profiles

3. ...communicate / share information

2. ...connect with other people



Motivation

- Facebook is one of the most successful IT products of all times
 - More than **400 million** active users
 - More **than 50% of active users** log on to Facebook in any given day
 - Average user spends more than **55 minutes per day** on Facebook
 - **30% of global Internet users** visit Facebook daily

(Facebook, June 2010, Alexa, 2009)


- Other OSNs enjoy popularity as well
 - StudiVZ has more than 16,6 million members (*StudiVZ, 06.2010*)
 - Vkontakte.Ru has 75 million members (*Vkontakte.Ru, 06.2010*)



OSNs create individual and public value

- A few more facts
 - Average Facebook user has **130 friends** on the site
 - Average user sends **8 friend requests** per month
 - Average user is invited to **3 events per month**
 - Average user is a member of **12 groups**

(Facebook, 01.2010)

- Creating social capital 
 - No need to go “bowling alone” any more *(Putnam, 2000)*
 - Public interest to keep OSNs in business
 - But under which terms??



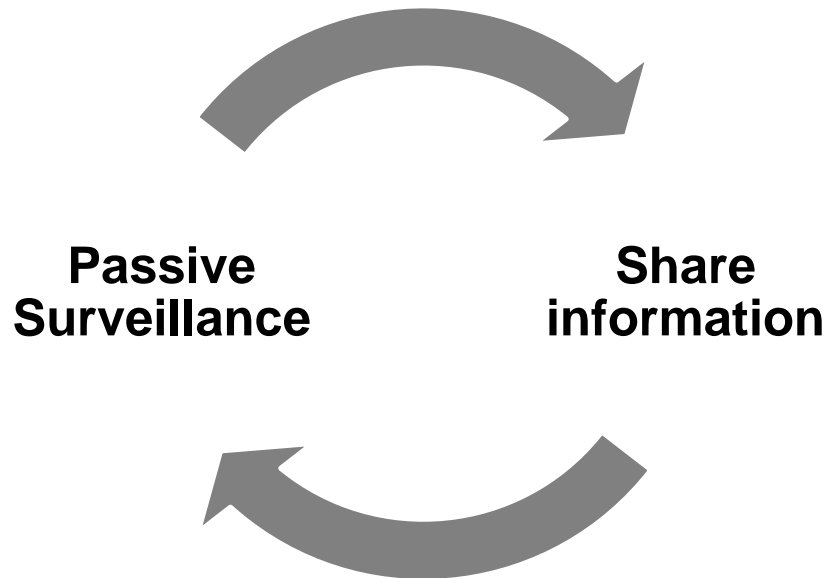
Content is the key to the Success of OSNs

Content is the key for OSN providers on both **Social** and **Business Levels**



Social Level: Content is crucial to support social involvement

Subtle cycle of communication on OSNs



“Without fresh material, the Profiles are static depictions of live conversations, frozen performances, outdated representations of self...”

(Boyd, 2006).



Business Level:

Content is the key (so far) to OSN commercial success



- User-provided content allows for **precise targeting and personalization**
- This is worth some money ...
- Microsoft paid **240 million** for **1.6%** of Facebook
 - => market valuation of **15 billion**
 - => limited profitability (**30 mln** in 2007)
 - => valuation is **500 times** earnings!
- Holtzbrinck paid ~ **84 million** for StudiVZ, limited income was generated!



Current Situation



So far users played the game:

- More than 35 million users update their status each day
- More than 55 million status updates posted each day
- More than 2.5 billion photos uploaded to the site each month
- More than 25 billion pieces of content (web links, news stories, blog posts, notes, photo albums, etc.) shared each month
- Average user writes 25 comments on Facebook content each month

This, however, may change!



Privacy awareness and privacy concerns are on the rise



333 articles related to user privacy concerns were identified just in the German press (Rizk et al. 2009)

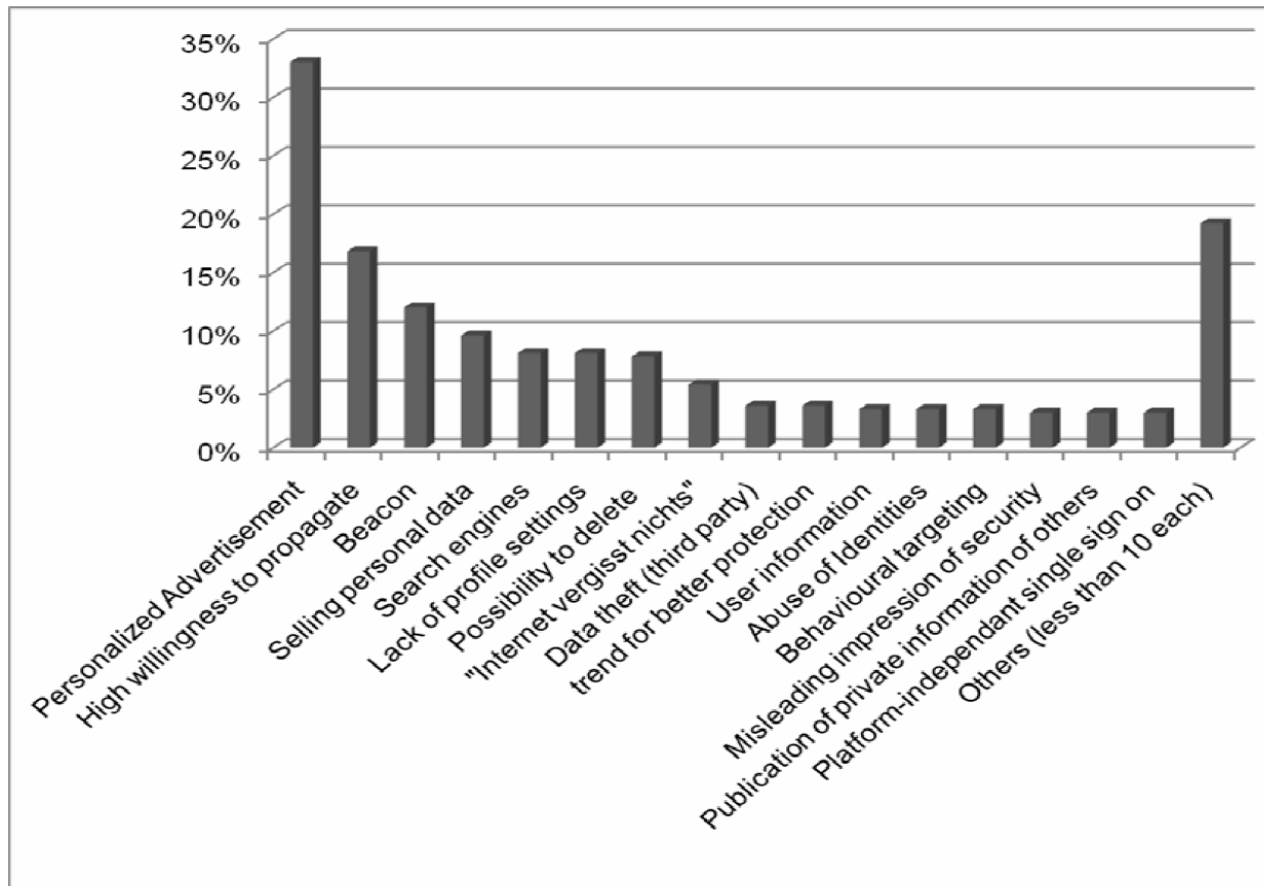
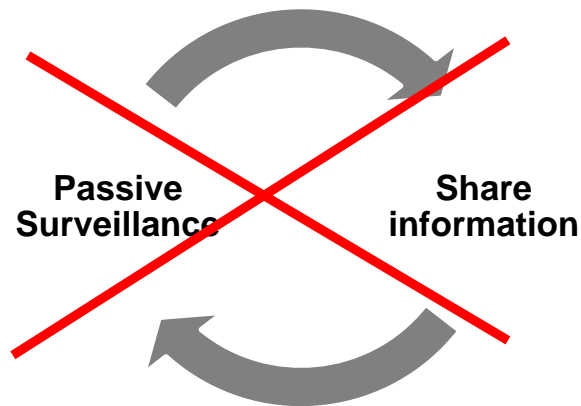


Figure 6. Percentage of articles per sub-theme



With privacy concerns rising, subtle cycle of information sharing can get broken ...



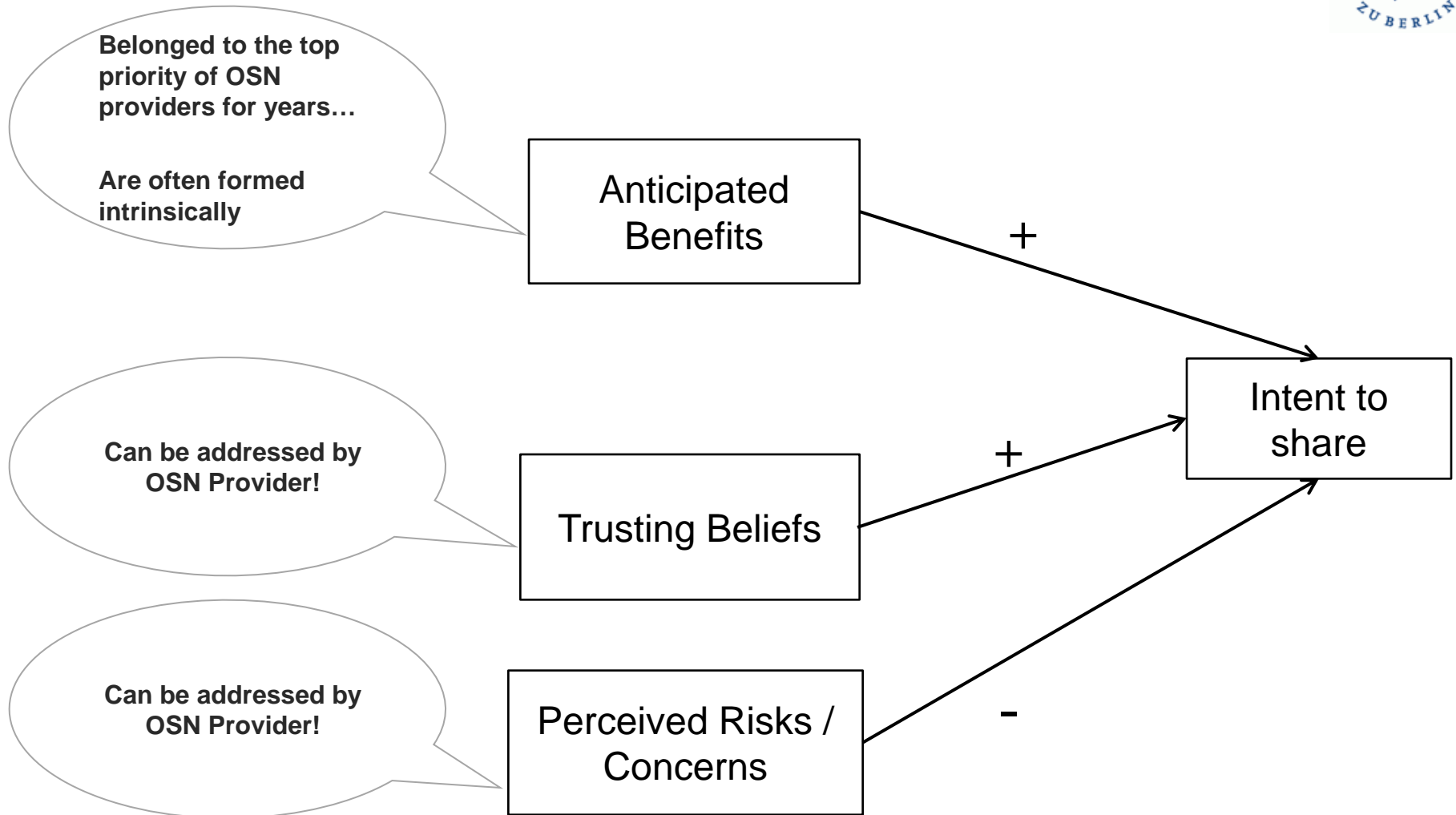
Danger to OSN sustainability!



How can OSN provider ensure healthy levels of self-disclosure?



Theoretical Foundation: Privacy Calculus (Dinev and Hart, 2006)



What can providers do to increase trust and decrease privacy concerns?



Justice / Fairness Framework



- **Research distinguishes between:**
 - Distributive justice
 - Procedural justice
 - Interactional justice



Communicating how the “pie is shared” may be the first step in ensuring right user attitude

“VZ-Networks finance themselves exclusively through advertising. In this way we can offer you quick and entertaining social network in which you can find your friends, write your news, chat, view, comment and tag photos for free... ”.

http://www.studivz.net/l/about_us/1

“We use the information we collect to try to provide a safe, efficient, and customized experience ”.

<http://www.facebook.com/policy.php?ref=pf>



Procedural Justice and OSNs

- **Giving users control is likely to ensure more trust and less concerns between parties involved**
- **Facebook's privacy guidelines**
*"Privacy is built around a few key ideas: You should have **control over what you share**. It should be easy to find and connect with friends. **Your privacy settings should be simple and easy to understand.**"*
- **Spiekermann (2005) differentiates between two types of control in the privacy context:**
 - control over being accessed => addressed by **privacy settings**
 - control over information use => addressed by **privacy policies**



Procedural Justice and OSNs (cont.)

- Control over being accessed via **privacy settings**:
 - Actions of other users
 - possibilities to remove photo tags, comments
 - report improper behavior
 - track the audience (e.g. StudiVZ)
 - Accessibility by search engines
 - Accessibility by third parties (e.g. applications)

- Control over information use via **privacy policies**
 - Information Collection
 - Information Secondary Use
 - Account Deletion



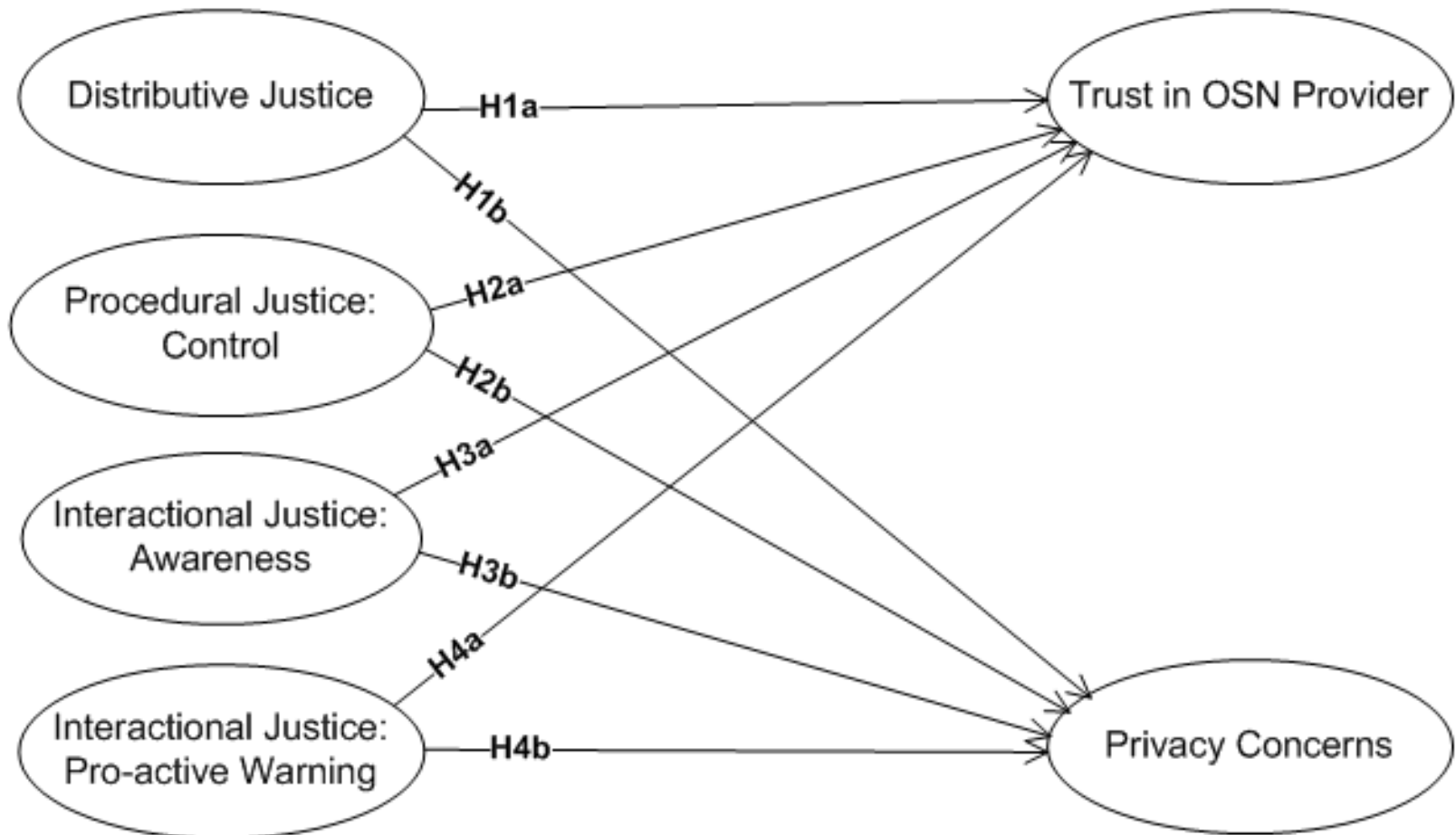
Interactional Justice and OSNs: Awareness and Transparency

- Awareness implies that the individuals must know how their personal information is used and what consequences may result
- Making users **aware** (e.g. by **explicit warnings**) is a critical step in ensuring trust and decreasing privacy concerns
- **Example:** No selling of private data without user's consent
- Not warning users in advance may provoke anger and disillusionment
- Recent update of Facebook privacy policy emphasizes pre-emptive warning:
 - „You should always review the policies of third party applications and websites to make sure you are comfortable with the ways in which they use information you share with them.“
 - „Even after you remove information from your profile or delete your account, copies of that information may remain viewable elsewhere to the extent it has been shared with others, it was otherwise distributed pursuant to your privacy settings, or it was copied or stored by other users.“



Conceptual Model

Main hypothesis of our model: Compliance with fairness principles is **positively** related with **trust** and **negatively** with **privacy concerns!**



Construct Operationalization

- Many scales had to be developed anew or adopted to the OSN context
- Example „Privacy Concerns“:
 - How much are you concerned that the information submitted on OSN
 - ...can be used in a way you did not foresee;
 - ...can be used against you by someone;
 - ...
- Example „Trust in OSN Provider“:
 - In general, my OSN
 - ...is open and receptive to the needs of its members;
 - ...makes good-faith efforts to address most member concerns;
 - ...



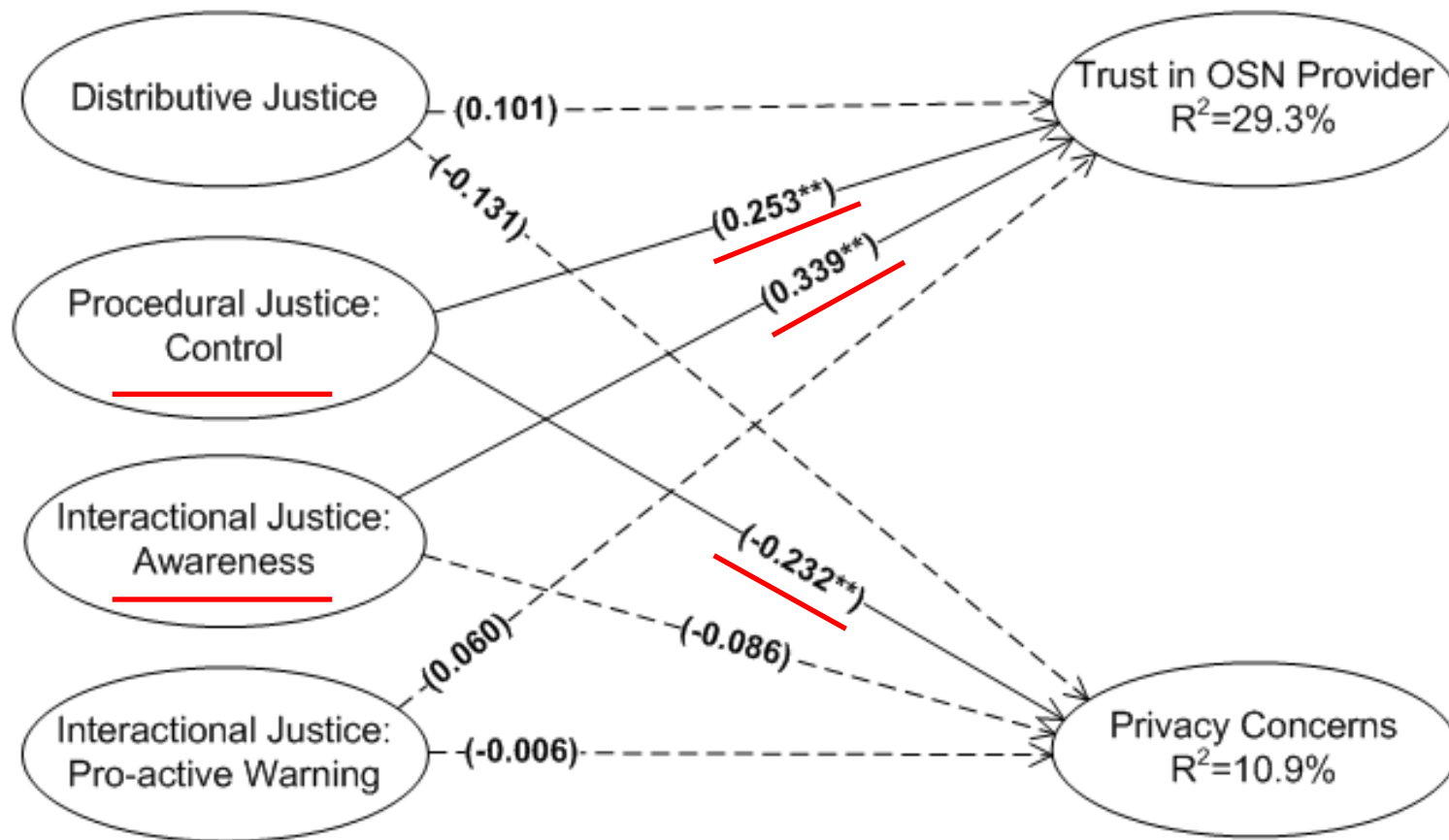
Recruiting and Sampling

- Online survey targeting Facebook users
- Recruitment via mailing lists and Facebook groups
- Participants received 5 Euros upon completion

- **237 observations**
 - 45.6% female
 - 73.4% students
 - 87.7% between 20-29 years old
 - 58.2% German or 41.8% foreigners living in Germany (no sig. differences)



Evaluation of the Structural Model



*: Significance at 5%, **: Significance at 1%;
 — represents a significant link; - - - represents an insignificant link



Conclusions

- **Enabling users with control is worth it**
 - Privacy settings
 - Privacy policies

- **Increasing user awareness is relevant**
 - Transparency
 - Easy-to-read
 - Higher coverage in PR campaigns

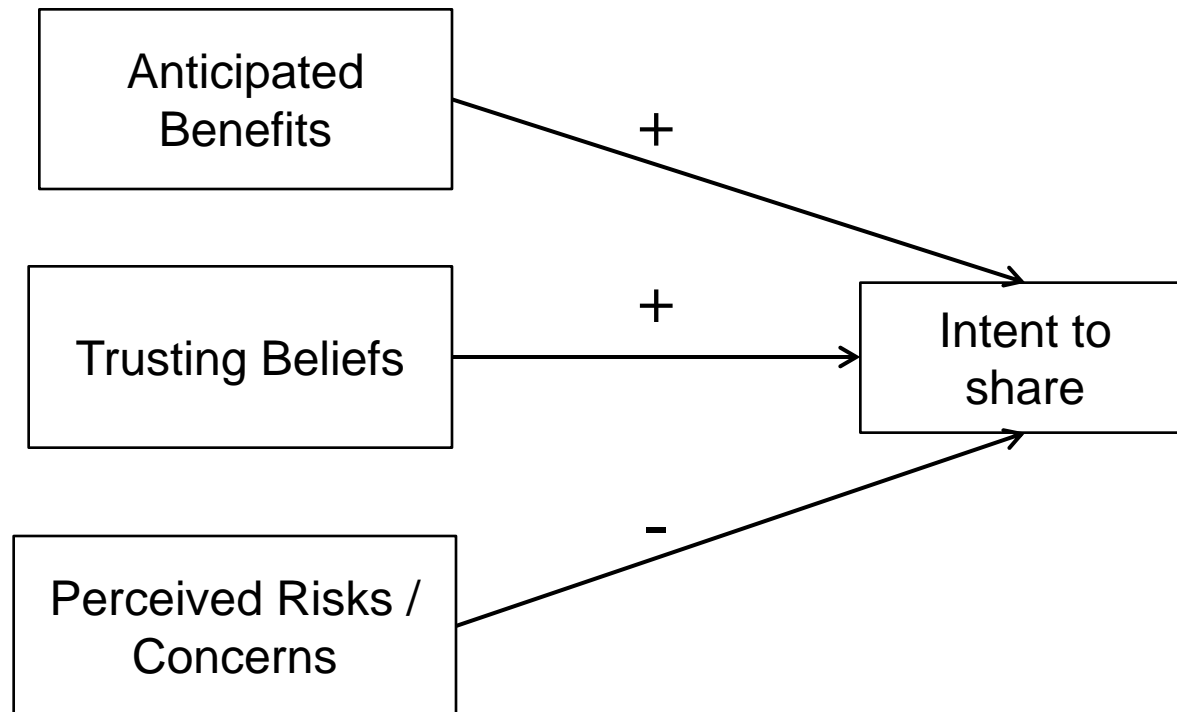
- **These insights hold not only from a moral standpoint but also from a business standpoint**



Backup



- **Anticipated Benefits, Privacy Concerns and Trusting Beliefs** are the main determinants of Self-disclosure and Participation online.





- **We rely on Justice / Fairness framework to study factors behind Trust and Privacy Concerns.**

- **Advantages of Fairness principles:**
 - can be easily translated into concrete actions of OSN provider
 - have received wide recognition in research (Social Contract Theory; Organizational Theory) and practice
 - *Often just reminding people of fairness is enough to avoid cheating (Dan Ariely)*
 - *Widely applied in the employer-employee context*



■ Distributive Justice:

- *“Perceived fairness of the amount of compensation employees receive” (McFarlin and Sweeney 1992, p. 626).*
- *“Internet users’ perceived fairness of the outcome that they receive from online companies in return for releasing their personal information” (Son and Kim 2008, p. 510).*
- *“Perceived fairness of the outcome an individual gets” (Culnan and Bies 2003).*



Procedural Justice

- **Procedural Justice:**

- Relates to the **perceived fairness of the procedures** and the way of how these procedures are applied (*Thibaut and Walker 1975; Leventhal 1980*).
- “Degree to which an Internet user perceives that online companies give him or her procedures for **control** of information privacy and make him or her aware of the procedures” (*Son and Kim 2008, p. 511*).
- Individuals must have **control over actual outcomes** such as disclosure and subsequent use of their personal information (*According to OECD Guidelines 1980*)



Interactional Justice

- **Interactional Justice:**
 - The fairness of **interpersonal treatment** of one party in an exchange relationship with the other (Son and Kim 2008).
 - Includes issues of **transparency and propriety of information** made during the enactment of procedures.
 - In the OSN context may involve 2 dimensions:
 - **Awareness: Am I adequately informed about the use of the data?**
 - **Pro-active Warning: Am I warned about the threats?**



- **Distributive Justice:**

- How fair is the following?

- **I would find it fair that some of the profile information I provide can be used for personalized advertising in exchange for free social networking services**
-

- **Procedural Justice: Control:**

- How much control is given to you by OSN (e.g. through functionality, privacy policies) over:

- **...the information you provide on OSN (e.g. in the profile, on the Wall etc.);**
- **...who can view your information on OSN;**
- ...



- **Interactional Justice: Awareness about OSN Policies:**
 - Generally, I find my OSN transparent in how the personal information I provide can be used.
 - My OSN clearly communicates what information it can collect about me.....

- **Interactional Justice: Proactive Warning:**
 - ...communicate how I can protect my information against abuse (e. g. by other parties or users);
 - ...warn me about possible misuse of my information (by other parties or users);



Evaluation of the Measurement Model: Convergent Validity

- Structural Equation Model (SEM)
- Evaluation was done using SmartPLS (Ringle et al. 2005)

Construct	Number of indicators	Composite Reliability	Average Variance Extracted (AVE)	Cronbach's Alpha
Privacy Concerns	7	0.93	0.65	0.91
Trust in OSN Provider	5	0.92	0.69	0.89
Distributive Justice	3	0.94	0.83	0.90
Procedural Justice: Control	3	0.88	0.72	0.80
Interactional Justice: Awareness	3	0.91	0.77	0.85
Interactional Justice: Warning	3	0.95	0.85	0.91

Table 2. Quality criteria of the constructs.

- Indicator reliability OK (all factor loadings > 0.7)
- Internal consistency OK because Cronbach's Alpha > 0.7
- Composite reliability > 0.6 -> OK
- AVE > 0.5 -> OK



Evaluation of the Measurement Model: Discriminant Validity

Construct	PC	Tr	DJ	PJC	IJA	IJW
Privacy Concerns (PC)	<i>0.806</i>					
Trust in OSN Provider (Tr)	-0.209	<i>0.831</i>				
Distributive Justice (DJ)	-0.208	0.238	<i>0.911</i>			
Procedural Justice: Control (PJC)	-0.287	0.372	0.264	<i>0.849</i>		
Interactional Justice: Awareness (IJA)	-0.166	0.453	0.182	0.228	<i>0.877</i>	
Interactional Justice: Warning (IJW)	-0.141	0.357	0.146	0.264	0.636	<i>0.922</i>

Table 3. Square Root of AVE (Diagonal Elements) and Correlation between Latent Variables (Off-diagonal Elements).

- Constructs are sufficiently different from each other
- AVE for each latent exceeds squared correlation between this variable and any other latent variables



Further Research and Cooperation Opportunities

- **Validation of the model:**
 - across different OSN platforms
 - across different countries

We are looking for international partners to conduct inter-cultural studies related to OSNs.

Contact us if you have interest to cooperate!

