Airline safety culture: A pan-European survey study of pilots

FSS 1st Public event

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Background Literature

• **Safety culture** is about safety-related:
  – Values (E.g. Do pilots value SOPs)
  – Beliefs (E.g. Do pilots think managers are committed to safety)
  – Behaviours (E.g. Are pilots reporting incidents)

  [Guldenmund 2000; Cooper 2000]

• In aviation, safety culture **key indicator** for assessing safety practices & susceptibility to safety problems.. due to low frequency of incidents

• Yet, **no systematic method** or practice of measuring safety culture amongst pilots in European aviation

• **Few academic studies with pilots** - Review shows 3/23 on commercial pilots, most on military flight crews [O’Connor et al 2011]

• **Important** times - transformation of aviation pressures and airline business models over the recent few years
Study Aims

1. Identify pilot perceptions on organisational safety culture within the European aviation industry

2. Identify areas where the industry is strong, and areas for improvement

3. Compare the experiences of pilots in different organisations and individual contexts.
Study Methods

• SC Survey measure
  – 58 items, almost all >3 items per safety culture dimension
  – 5 point agreement Likert scale

• Sections
  • A: Demographics
  • B: General
  • C: Operational
  • D: Work life

• Theoretical constructs added to validated items from ATM
Study Methods

• Data collection
  – Online survey via ECA & Social media
  – Commercial pilots based in Europe

• Data Analysis
  – Descriptive analysis of survey items
  – Group correlations & comparisons by dimensions (e.g. ANOVAs)
Findings

n=7,239
(14% response rate of pop.)
Demographics

- Male (96%)
- Aged 31-50 (62%)
- Considerable flying experience (44% had >10,000 flight hrs)
- Captains (56%), First Officers (43%)
- No managerial role (88%)
- Almost half (48%) had been in their company for >11yrs
- Trained through self-funded modular training (42%)
Responses by Country Base

(Nb. Excludes those that make up >1% of sample; Nationality very similar make-up)
Responses by Company Type

- Aereal work/ambulance/surveillance: 1%
- Business: 2%
- Cargo: 6%
- Charter/leisure: 7%
- General Aviation: 2%
- Helicopter: 1%
- Low cost: 24%
- Network: 55%
- Other (Please state): 2%
Responses by Contract Type

- Typical contract = Permanent contract
- Atypical contract = Self-employed; Zero-hours, fixed-term, pay-to-fly contracts

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Responses</th>
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<tbody>
<tr>
<td>Typical contract</td>
<td>6394</td>
</tr>
<tr>
<td>Atypical contract</td>
<td>805</td>
</tr>
<tr>
<td>Other (Unemployed/retired)</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>7227</td>
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</tbody>
</table>
Highest & Lowest Favourable Responses by General Items
Most favourable responses: General questions

- **B01** My colleagues are committed to safety.
- **B02** Voicing concerns about safety is encouraged.
- **B07** I have confidence in the people that I interact with in my normal working situation.
- **B26** If I see unsafe behaviour by any of my colleagues I would talk to them about it.
- **B15** I am prepared to speak to my direct manager when unsafe situations are developing.
B16  There is good communication up and down the company about safety.

B12  We get timely feedback on the safety issues we raise.

B17  Changes to the company, systems and procedures are properly assessed for safety risk.

B03  We have sufficient staff to do our work safely.

B06  Pilots have a high degree of trust in management with regard to safety.
C13 I feel entirely confident to fly my aircraft.

C02 I read reports of incidents or occurrences that are relevant to our work.

C16 I have sufficient training to understand the procedures associated with my work.

C14 The SOPs associated with my work are appropriate to ensure safe operations.

C10r I have to take risks that make me feel uncomfortable about safety.
C05 I am satisfied with the level of confidentiality of the reporting and investigation process.

C03 We have procedures that are focused on appearing to follow the rules, rather than improving practice.

C07 I have sufficient opportunity to regularly practice my manual flying skills.

C08 Maintenance are able to promptly repair technical deficiencies to the aircraft.

C09 Adequate training is provided when new systems and procedures are introduced.
D08 Captains encourage their crew to speak-up if they are concerned with decisions made by the Captain.

D07 My national aviation authority takes safety seriously.

D16r The company would ignore any complaint from me.

D06 I would feel comfortable to complete a fatigue report.

D02 First officers are willing to challenge Captains on their decision making.
D01r Pilots in this company are often tired at work.

D11 The company really cares about my wellbeing.

D14 The company cares about my general satisfaction at work.

D15r Even if I did the best job possible, the company would fail to notice.

D13r The company fails to appreciate any extra effort from me.
Groups Comparisons by Dimensions
Overall Results

Overall M = 3.49

- Management commitment to safety
- Collaboration and Involvement
- Just Culture and Reporting
- Communication and Learning
- Colleague commitment to safety
- Risk Handling
- Procedures & Training
- Staff and equipment
- Fatigue
- Speaking up
- Perceived Organisational Support

Mean
Company variations

(NB. Excludes companies with >30 responses)
(NB. Company ID varied per graph)
• Sig. diffs ($p<0.001$) by company type for 10 dimensions

• Pattern - lower safety culture ratings amongst pilots at Low Cost & Cargo airlines than other airline types (esp. Network airlines)

(NB. Many mean differences have low effect sizes)
- Sig diffs \( p<.001 \) between different contracts for all but 2 dimensions.
- Pattern - pilots with atypical contracts view safety culture less positively than those on typical contracts

(NB. Typical \( n=6394 \), Atypical \( n=805 \) contracts)
Conclusions

• Overall, the average safety culture is good (m=3.49)
  – Positive results for colleague commitment & speaking up

• Potential improvement/concern areas:
  – Fatigue management
  – Pilots on unsecure contracts
  – Cargo & Low Cost airlines

• Regulators, airlines and pilot associations need to consider results & ways forward.
Study Limitations

• Predominantly used union members to help with survey distribution

• Caution in interpreting results - SDs high and effect sizes low

• Cannot guarantee same pilots did not complete more than once (though conducted Fraud detection)
More than half of airline pilots ‘fly while tired’

Pilots are too often flying when tired

Waking up to fatigue

Airlines should not lose sight of the things that make them so safe
Acknowledgements

• European Commission

• European Cockpit Association

• Future Safety Sky Team