

Introduction

The future manufacturing vision behind Industry 4.0 identifies business collaboration as one of the core enablers of the new industrial paradigm [1]. Our team at the University of Manchester works closely with automotive and aerospace manufacturers to develop an advanced knowledge-driven configurator system [2] that advises its users with which businesses to partner to “catch” a specific business opportunity. The users of our system are of course the key to its uptake and impact. We therefore need to understand the key factors which make them accept recommendations from such a system, and their relationships, creating a factor model of advice acceptance.

We aim to answer this research question:

What are the important factors influencing users' acceptance of advice coming out of a knowledge-based system in the context of business collaboration?

Study schedule

At Hamburg Aircraft Interiors Expo 2019

- Background presentation (~5 min)
- Demographics collection (~5 min)
- Video of system functionalities (5 min)
- Laddering interview (~15 min)

Data Analysis

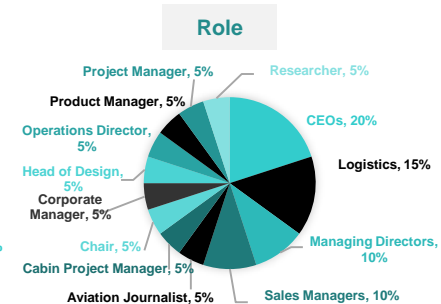
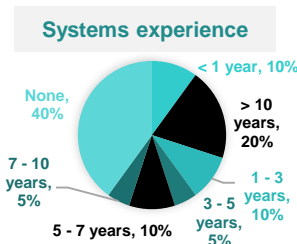
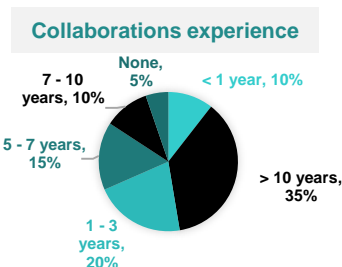
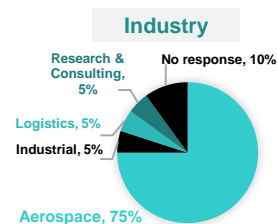
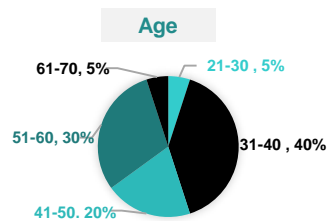
- Identification of summary content codes from the interview transcriptions (Atlas.ti)
- Generation of an implication matrix indicating the direct and indirect relationships using the content codes (LadderUX)
- Construction of a hierarchical value map based on the relationships found

References

- [1] Camarinha-Matos, L. M., Fornasiero, R. and Afsarmanesh, H. 2017. "Collaborative Networks as a Core Enabler of Industry 4.0." In, 3–17. Springer, Cham.
- [2] Cisneros Cabrera, S., Sampaio, P., and Mehandjiev, N. 2018. A B2B Team Formation Microservice for Collaborative Manufacturing in Industry 4.0. In 2018 IEEE World Congress on Services (SERVICES)
- [3] Reynolds, Thomas J. 1988. "Laddering Theory, Method, Analysis, and Interpretation." Journal of Advertising Research.

Research participants

25 participants → 20 valid interview transcripts (2 females (10%) ,18 males (90%)):



Analysis and Discussion

Using a means-end approach through a laddering technique [3], we obtained insights that suggest *trust*, *time saving*, *explanation of results*, information quality and *financial benefits* are among the important factors influencing users' acceptance of AI advice regarding B2B collaborations. We also obtained an understanding of the role these factors play in the industry environment and how this should be reflected in well-designed systems providing advice. We also explored the role of explanations of results in ensuring acceptance of AI-generated advice.

Results



Future work

- Validating a model of advice acceptance towards design guidelines of team formation systems in the supply chain.
- Extending the range of systems to group decision recommenders.

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1 Search prospective teams 2 Review teams & replace members 3 Review assignments

Proposed team members										Preferred replacements (PR)			
Team 1		Team 2		Team 3		Team 4		Team 5		Team 6		Team 7	
Replace	Company	risk	Product	Plan & Manage	Design & Develop	Integrate Design	Source	Make	Assemble	Deliver	Fit	Company	
<input type="checkbox"/>	AviaDesign	0.22	pre_assembled_and_tested_lav	-----	-----	-----	-----	<input checked="" type="checkbox"/>	-----	-----	1.00	AirFrames Ltd.	
<input type="checkbox"/>	CT.Ltd.	0.18	pre_assembled_and_tested_lav	<input checked="" type="checkbox"/>	-----	-----	-----	-----	-----	-----	1.00	SME2	
<input type="checkbox"/>	CertiCon a.s.	0.23	pre_assembled_and_tested_lav	-----	-----	<input checked="" type="checkbox"/>	-----	-----	-----	-----	1.00	Ontoair	
<input type="checkbox"/>	<not available>	1.00	Lavatory_toilet_module1	-----	<input checked="" type="checkbox"/>	-----	-----	-----	-----	-----	0.00		
<input type="checkbox"/>	<not available>	1.00	Lavatory_lower_service_cabinet	-----	<input checked="" type="checkbox"/>	-----	-----	-----	-----	-----	0.00		
<input type="checkbox"/>	<not available>	1.00	Lavatory_upper_service_cabinet	-----	<input checked="" type="checkbox"/>	-----	-----	-----	-----	-----	0.00		

11 companies in Team 5, team risk is 1.00, team fit is 0.18. Facilitator: ☐

Search companies...