# Contributions to Management Science

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Jan Kraner

# Innovation in High Reliability Ambidextrous Organizations

## Analytical Solutions Toward Increasing Innovative Activity

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*It must be considered that there is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order, this lukewarmness arising partly from fear of their adversaries, who have the laws in their favour; and partly from the incredulity of mankind, who do not truly believe in anything new until they have had actual experience of it.*

Machiavelli (1532)

# Author's Note

This dissertation was written by myself and with usage of my own words, except for quotations which are clearly indicated and acknowledged accordingly. The source of any graphic, figure, or illustration is as well quoted according to the original source.

# Preface

The main objective of this research was to examine how and why key players support or hinder the implementation of a technological innovation and what influence the interaction between explorative and exploitative key players has in the context of high reliability organizations (HROs).

To cover these objectives, qualitative in-depth research in the form of a case study was conducted at two companies belonging to the aviation industry in order to investigate interrelated causal links and interactions that would have been too complex to be analyzed with a quantitative approach. To obtain reliable results, method triangulation was applied in the form of interviews, focus groups, and some direct observation and gathering of artifacts. Data triangulation was also used based on evidence from innovation-related internal documents, transcribed statements and discussions, and third-party articles.

The empirical results showed that there are certain key players and different forms of interactions that support or hinder the implementation of technological innovation. The supporting key players identified here are knowledge sharing exploitative players, innovation supporting informal leaders, and the so-called side changers, that is, key players who were once located on the exploitative or explorative side and later changed sides when taking over new functions. Key players with a strongly inhibitory impact are innovation opposing informal leaders, noncooperative exploitative players, and fanatic explorative players. With regard to formal and informal interactions, it was verified that informal interactions have a tremendous influence, both at the top and bottom of the hierarchy, on the successful implementation of an innovation.

The main conclusions and implications drawn from the research are that the election of the program leader for the implementation of an innovation as well as the election and involvement of other key players is crucial. Formal and, especially, informal channels should also be managed as closely as possible in such undertaking. Interaction processes between exploitative and explorative players should be iteratively intensified and managed closely, and trust should be considered a source of traction when implementing an innovation. Therefore, the successful implementation

of an innovation depends on several parameters within the broader organizational context but most notably on strong leadership, deliberate listening to and engagement with the exploitative players, the management of informal channels, and transparency in communication.

Zurich Jan Kraner

# Acknowledgements

Machiavelli's statement, written almost 500 years ago, sums up neatly what I also discovered in my research. He had found that innovations are not embraced by the people whose traditional order is disrupted by innovation. However, he also recognized that people start to believe in something once they have actual experience with it and that certain players influence the different orders with their power.

The dissertation in your hand follows the insights of Machiavelli. It is, above all, the product of hard work over the last 5 years. After having finished my master's degree as a father of two children, I had to promise my wife Simone when I seriously began considering a PhD to work on it whenever I could but never at home while the children were awake. I can announce that I wrote this PhD essentially on my 3-h commute to work, while others read newspapers. However, on about half the days I set my alarm clock to go off at about 04.00 a.m., in order to have some extra hours for working on the thesis. Next to that, the first 2 years were given over to lots of reading, which proved to be the single best lullaby when reading out aloud in front of our baby's crib. Another insight I gained was that the topic I chose was indeed my topic. As such, it might be boring for others, but it kept me fascinated for about 2 years before my PhD program started and it continues to do so now, as I tasted blood and am keen to discover more and apply my new knowledge right away.

Over the last years, most of our family vacations took place very close to my university, and, to be very honest, I could not have made it without getting significant freedom during my after-work hours from my wife Simone. So my deepest thank goes to her, for all her support and the sponsorship she gave me over the last years and especially over the last year when the actual writing happened. Second, I would like to thank my thesis director Nekane Aramburu who knew how to assist me with to-the-point feedback on my results and a very warm endorsement whenever it was needed during these intense years. Her competence and adamant sense of purpose were priceless for what I could learn from her. Third, special thanks go to Swiss and skyguide, the two companies that participated in my extensive case studies and gave me access to relevant data, and to Harmonie Sauer who acted as

a kind of tutor in Switzerland and a source for instant feedback whenever I was in doubt or had a pressing question.

Also I want to thank very much Reinhild Ritler, my favorite artist for her monoprints that were produced for the dissertation, my sisters for their pragmatic hints and tips when lost in data or on the way to getting or analyzing them, my parents for supporting me with their backing over all those decades, the University of Applied Science of Zurich and Lucerne for their contributions in working time, and my kids for always showing me what is really important at the end of the day.

Zurich, March 2017 Jan Kraner

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# List of Abbreviations

| | |
|---|---|
| ACC | Area Control Centre |
| A.M. | Ante meridiem |
| ANSP | Air Navigation Service Provider |
| ATCO | Air Traffic Controller |
| ATM | Air Traffic Management |
| BFE | Buyer Furnished Equipment |
| CCO | Chief Commercial Officer |
| CFO | Chief Financial Officer |
| CEO | Chief Executive Officer |
| CHIPS | Swiss Implementation Program for SESAR-related activities |
| COO | Chief Operations Officer |
| DC | Douglas Commercial |
| Dr | Doctor |
| EASA | European Aviation Safety Agency |
| EB | Executive Board |
| EBCO | Executive Board Committee Operations |
| Fam | Family |
| FOCA | Federal Office of Civil Aviation |
| HRM | Human Resource Management |
| HRO | High Reliability Organization |
| ICAO | International Civil Aviation Organization |
| ID | Identification |
| IT | Information Technology |
| Ltd | Limited |
| NDA | Non-disclosure Agreement |
| OA | Organizational Ambidexterity |
| OEM | Original Equipment Manufacturer |
| OK | Oll korrect |
| ORE | Operational Risk Evaluation |
| ORA | Operational Risk Assessment |
| OTM | Organizational Transformation Model |

| | |
|---|---|
| PhD | Doctor of Philosophy |
| PLC | Product Life Cycle |
| Prop | Proposition |
| R&D | Research and Development |
| SESAR | Single European Sky ATM Research Programme |
| SIM | Simulator |
| UMB+ | Unit Management Board (plus) |
| VC | Virtual Center |
| VCM | Virtual Center Model |
| VP | Vice President |
| ZH | Zurich |
| ZHAW | Zürcher Hochschule für angewandte Wissenschaften |
| 3D | Three Dimensional |