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Summaries

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Foreword from the President

EDAMBA, the European Doctoral programmes Association in Management and Business Administration has the mission to support and facilitate cooperation by providing and managing a network to exchange information, disseminate best practices and raise the quality of doctoral education among its members in Europe and beyond. For the past quarter century, **EDAMBA** has helped the participating schools to increase the quality of their Doctoral programmes, as well as to create an environment of excellence with a European perspective, all the while pursuing diversity. In many ways it has proved to be an unparalleled forum of discussion to schools that have a long established tradition of doctoral education and also to those who have recently started this new practice. The ultimate goal is to have the **EDAMBA** network reach as far and wide as possible, while at the same time maintaining the integrity of the various programmes within the network.

Currently EDAMBA has 60 doctoral programmes as members of the Association coming from 24 countries. It is governed by the General Assembly, which elects each year an Executive Committee. The main current activities of the Association are the Annual Meetings, the Research Summer Academy, the Consortium on Doctoral Supervision, the Thesis Competition.

The Annual meetings have become during the years the main platform for discussing common problems and issues, discussing impressive changes in the doctoral landscape and promoting best practices among the Directors of Doctoral programmes in the association. The Summer Academy operating since 1992 with its international dimension has been the privileged forum for dialogue on research paradigms and methodologies while building a strong scholarly network among doctoral students coming from a broad range of programmes and disciplines.

The Winter Academy launched in 2008 aims at improving the quality of doctoral supervision by fostering a dialogue among senior and junior faculty and developing competent supervisors for addressing the shortage of qualified faculty in Business and Management studies in the European Universities and Business Schools. In the steps of the Winter Academy, as a joint initiative between the EIASM and EDAMBA in shaping the new landscape of global doctoral education, EDAMBA runs a Consortium on the importance of supervision in doctoral education. A European Code of Practice for Doctoral Studies in Management and Business has just been published for consultation with our membership and wider community.

The Thesis Competition was first launched in 2003. It aims at distinguishing high-quality doctoral dissertations which have significantly contributed to new knowledge in all areas of business studies and management. The top-3 peer reviewed abstracts are given prizes and the short-list of selected abstracts is published in this EDAMBA journal. With this publication, we hope to contribute to the dissemination of distinguished doctoral dissertations from throughout our network in Europe and worldwide.

Dimitris ASSIMAKOPOULOS
EDAMBA President

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FIRST AWARD

Extending sustainable practices along the supply chain

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Abstract

The objective of this PhD Thesis is twofold: First to study the antecedents of sustainable supplier development practices with an emphasis on country differences. Second, to examine the effectiveness of sustainable supplier development practices on both the supplier and the buying firm's sustainability performance. By analyzing two different sets of data (one single country and one multi-country dataset), our results help to better understand the antecedents and the performance implications of sustainable supplier development practices. In addition, our results provide managerial insights on how to extend sustainability upstream the supply chain.

Introduction

Recently, there has been an increasing awareness of sustainability issues in both the management and the research fields. On the one hand, large companies have started to report on their social and environmental performances. On the other hand, the concept of sustainability has also begun to appear in the literature of disciplines such as operations or supply chain management (SCM) (Carter and Rogers, 2008). In fact, the focus of the SCM discipline has recently moved from considering cost and operational issues such as service improvement or quality, to also include environmental and social aspects (Fabian and Hill, 2005) as a way to pursue sustainability along the entire supply chain (SC). Sustainable SCM (SCM) embodies the firm's activities that integrate both environmental and social issues into SCM to improve the firm's sustainability performance as well as that of its suppliers and customers (Seuring and Muller, 2008). Based on this definition, two important aspects need to be highlighted. First, to achieve sustainability firms should engage on both environmental and social issues. That is, firms should not only green their supply chain but also make it more socially responsible. Second, sustainability extends the boundaries of the firm and includes not only the implementation of internal sustainable practices (e.g., use of clean technologies and/or the implementation of work/life balance policies) that improve the firm's sustainability performance but also the extension of sustainable practices to other partners in the SC (e.g., training suppliers on environmental risks) with the aim of having a positive impact on their sustainability performance. This PhD Thesis focuses on this second set of practices (i.e. practices that aim to extend sustainability to suppliers) and studies their role on extending sustainability upstream the SC.

Literature Review

One particular challenge firms face when managing sustainability is its extension to other partners in the SC (i.e., suppliers) since firms are held responsible not only for their actions but also for their suppliers' unethical behaviors. As pointed out by Faruk et al. (2002) suppliers' poor environmental management can harm the buying firm's environmental performance. This is also true in the case of social issues. For instance, companies such as Nike or Apple have been vilified because some of their suppliers were employing child labor in their facilities. As firms realize that customers and stakeholders do not distinguish between the lead company and its partners in the SC (Large and Gimenez, 2011) the need to develop governance mechanisms that allow them to extend sustainability along the SC becomes clear (Kytle and Ruggie, 2005). In the SCM field, the set of practices aimed at improving suppliers' performance is known as supplier development (SD) (Krause et al., 2000). To improve suppliers' performance, buying firms can implement SD strategies such as assessing suppliers, providing suppliers with incentives, instigating competition among them or working directly with them (Krause et al., 2000). In the context of sustainable SCM two main sets of SD practices have been studied: supplier assessment and collaboration with suppliers (e.g., Keating et al., 2008; Lee and Klassen, 2008; Vachon and Klassen, 2006).

Supplier assessment efforts by buying firms represent in-depth evaluations of the suppliers' performance (Krause et al. 2000). These activities can take the form of questionnaires, non-regulatory standards or third-party audits (Walton et al., 1998) and suppliers' company visits (Large and Gimenez, 2011). This evaluation process, allows the buying firm to determine if the supplier meets current and future business needs.

Supplier collaboration entails the direct involvement of the buying firm in the SD effort. The buying firm direct involvement includes investments in the supplier through training of supplier's personnel and/or dedicating buying firm personnel temporarily to the supplier (Krause et al., 2000).

In the sustainable SCM literature, there is a growing body of empirical research that has studied these practices. Some papers have focused on their antecedents (e.g., Bowen et al. 2001; Reuter et al., 2010; Vachon and Klassen, 2006) and others on their impact on different dimensions such as the management of sustainability (e.g., Ciliberti et al., 2008; Klassen and Vachon, 2003), environmental capabilities (e.g., Lee and Klassen, 2008), environmental investments (e.g., Klassen and Vachon, 2003; Vachon, 2007), commitment (e.g., Simpson et al., 2007) and performance (i.e., Green et al., 2012; Hollos et al., 2012; Vachon and Klassen, 2008; Zhu and Sarkis, 2004). This PhD Thesis will focus on studying the antecedents of these practices and also their impact on performance.

An in-depth literature review on these two issues highlights the following gaps in the sustainable SD practices literature: (1) the study of social SD practices, (2) their impact on the social dimension of sustainability and (3) the consideration of country/culture differences. In addition, there are two particular gaps linked to each literature review (i.e., antecedents and performance). In the case of the study of antecedents there is also a gap related to the study of external antecedents. Finally, in the case of the literature that has analyzed the practices-performance relationship, there is a gap related to the inclusion of the suppliers' performance construct.

In this PhD Thesis we aim to fill the abovementioned gaps and study (1) the antecedents of sustainable SD practices putting emphasis on country differences and (2) the impact of SD practices (i.e. assessment and collaboration) on both the buying firm's and the suppliers' sustainability performance with a special focus on the social dimension. More specifically, this PhD Thesis aims to answer the following research questions (RQs):

RQ1. *Do external and internal antecedents have the same influence on the adoption of sustainable SD practices across countries?*

RQ2. *Do sustainable SD practices (i.e., assessment and collaboration) contribute to improve suppliers' and/or buying firm's performance?*

RQ3. *What is the role of suppliers' performance in the sustainable SD practices – buying firm's performance relationship?*

RQ4. *Is the effectiveness of sustainable SD practices consistent across different national cultures?*

By answering these RQs this thesis aims to contribute to both research and practice. First, we aim to contribute on the limited literature on sustainable SD practices that has considered the social dimension of sustainability. We will do this by considering the social dimension both in terms of practices and performance outcomes. The inclusion of the social dimension of sustainability will provide managers with insights and recommendations on how to achieve not only an environmentally friendly SC but also a socially responsible one. Second, we aim to contribute to the current literature by considering country differences with respect to the adoption and the effectiveness of these practices. For managers, it will be interesting to know which pressures and practices are more (in)effective with respect to the country in which their firm is located. Finally, we also aim to contribute to the scant literature that has analyzed the sustainable SD practices-performance relationship considering the suppliers' performance. The extension of sustainable practices to suppliers comprises two entities: the buying firm and the supplier. Until now, research has focused on the impact these practices have on the buying firm performance. This study will consider the supplier's side and hence broaden the understanding we have about the relationship between these practices and performance. This will provide managers with a better understanding of the effectiveness of these practices. For example, it can be the case that one set of practices (i.e., assessment or collaboration) is more effective than the other on improving the suppliers' performance.

Research Paradigm and Research Methods

The research paradigm refers to the way in which knowledge is perceived and obtained. Traditionally, two extreme positions have been adopted with respect to these issues in the field of social sciences: interpretivism and positivism. The interpretivism approach suggests that reality is viewed and interpreted by the individual and puts emphasis on the need of critical reflections on the research context (Galliers, 1993). Knowledge is understood as being subjective and personally experienced by the researcher rather than imposed. In that sense, interpretivism believes that knowledge is socially constructed as people interact with the world around them.

The positivistic approach suggests that knowledge is based on experience of sense and can be obtained by observation and experiment. In that sense, they believe that causal relationships can be found and that hypotheses can be developed and tested in order to predict a phenomenon. Positivist thinkers understand knowledge within the framework of the principles and assumptions of science: determinism, empiricism, parsimony and generality (Cohen et al., 2000). Determinism implies that events are caused by other circumstances (i.e., existence of cause-effect relationships). Empiricism suggests that quantifiable measures of variables exist and can be collected. Parsimony refers to explaining the phenomenon under study in the most economic possible way. Generality implies that it is possible to draw inferences about a phenomenon from a representative sample to a stated population. This PhD thesis adopts a positivistic approach to knowledge. The reason for adopting a positivistic approach lies in the nature of the RQs, which aim not to interpret the phenomenon of sustainable SD practices but to understand the influence of other variables on their adoption as well as the relationship between the implementation of sustainable SD practices and performance. In other words, this PhD Thesis RQs aim to explore causal-effect relationships between different constructs.

The chosen research paradigm has a great influence on the research method that needs to be employed. In this case, positivism gives importance to research methods focusing on quantitative analysis. This is the reason why in this PhD Thesis survey methodology is employed. More specifically, two different surveys are used to answer to the proposed RQs. To answer our first and fourth RQs we employ the 6th round of the International Manufacturing Strategy Survey (IMSS). The IMSS is an international network of researchers in universities located in more than 20 different countries that focuses on the study of manufacturing and SC practices. The IMSS-VI sample consists of 931 plants from 22 countries belonging to 6 different sectors. To answer the second and third RQs, we use a survey developed in the BuNeD Research Group aimed at studying the implementation of sustainability practices in the SC. The sample consists of 120 Spanish manufacturing firms and data was collected in 2011. To analyze these two datasets we employ Ordinary Least Squares (OLS), Partial Least Squares (PLS) and multilevel regressions. The choice of data analysis technique is dependent upon different factors such as sample size, clustering of data, and/or number of constructs and relationships.

Research Findings

In this PhD each of the abovementioned RQs has been analyzed and answered in a specific chapter. In the following lines we present the main findings from each of the thesis chapters and provide an explicit answer to each RQ.

RQ1. Do external and internal antecedents have the same influence on the adoption of sustainable SD practices across countries?

To answer this RQ we studied the influence of both internal and external antecedents on the adoption of sustainable SD practices. Supplier integration is considered as an internal antecedent and its enabling role in the adoption of sustainable SD practices is studied. Mimetic, normative and coercive pressures at the country level are considered as external antecedents and its role as drivers in the adoption of sustainable SD practices is analyzed.

Our results show that while mimetic pressures have a positive and significant effect on the adoption of sustainable SD practices, coercive and normative pressures do not. In addition, our results also show that supplier integration positively moderates the relationship between mimetic pressures and sustainable SD practices adoption.

These results can be interpreted as follows: In countries in which firms extensively implement sustainability practices (e.g., energy and water consumption reduction programs or work and life balance policies), firms are more pressured to adopt practices that have as an aim the extension of sustainability to suppliers. Regulations and pressures coming from social groups such as NGOs or the media do not seem to affect the adoption of these sustainable SD practices. Furthermore, the adoption of these practices due to mimetic pressures is higher when these firms are externally integrated with their suppliers (i.e., in the context in which firms have already in place mechanisms to share information or make joint decisions with their suppliers).

Overall, answering RQ1, the adoption of sustainable SD practices is higher in countries characterized by high levels of mimetic pressures. That is, firms with plants located in countries largely committed to sustainability might be more willing to adopt practices that aim to extend sustainability to suppliers in order to legitimate their position as sustainability oriented firms. These results show that sustainable SD practices can be described as a competitive weapon rather than a tool to merely comply with stakeholders such as governments, NGOs and/or trade unions.

RQ2. Do sustainable SD practices (i.e., assessment and collaboration) contribute to improve suppliers' and/or buying firm's performance?

This RQ analyzes the effectiveness of SD practices on both the suppliers' and the buying firm's performance with a special focus on the social dimension. Assessment (e.g., evaluation of supplier in terms of social issues) and collaboration (e.g., provision of training related to health and safety issues to suppliers) have been considered as SD practices. Both the suppliers' and the buying firm's performance are focused on the social dimension of sustainability. In addition, our results highlight that the following three performance dimensions need to be distinguished: buying firm's social reputation, buying firm employees' well-being, and suppliers' social performance.

Our results show that assessment and collaboration impact differently on each performance dimension. While assessment helps to improve the buying firm's social reputation, collaboration has a positive influence on supplier's social performance. Furthermore, our results show that there is no support for the link between assessment and both buying firm's employees well-being and suppliers' social performance and for the link between collaboration and buying firm's social performance (i.e., social reputation and employees' well-being).

When a buying firm evaluates suppliers in terms of social issues it projects a socially-responsible image in the eyes of its stakeholders which helps to improve its reputation as a socially responsible firm. However, the assessment of suppliers does not help to improve employees' well-being in the buying firm, as these improvements might be more related to the implementation of sustainability practices within the boundaries of the firm. In this same line, assessing suppliers does not improve the suppliers' performance. While assessment practices can help to identify potential areas of improvements at the suppliers' facilities they do not contribute to real improvements. To improve the suppliers' performance buying firms need to directly collaborate with them by providing training, working directly with them or investing resources.

Overall, answering RQ2, both assessment and collaboration are needed to achieve a socially-responsible SC. However, their contribution is different. While assessment helps to improve the buying firm's social reputation; collaboration improves the supplier's social performance.

RQ3. What is the role of suppliers' performance in the sustainable SD practices – buying firm's performance relationship?

To answer to this research question, we first studied the impact of social SD practices on the suppliers' social performance and the buying firm's operational and economic performance and then analyzed the mediating role of suppliers' social performance on the SD practices – buying firm's performance relationship.

Our results show that SD practices help to improve both the suppliers' social and the buying firm's operational performance. However, they have a negative impact on the buying firm's economic performance. Also, with respect to the role of suppliers' social performance, our results indicate that suppliers' social performance has a positive impact on both buying firm's performance outcomes (i.e., operational and economic performance) and that it mediates the relationship between SD practices and operational performance.

These results imply that implementing social SD practices have benefits for suppliers and buying firms. On the one hand, working together with suppliers or providing training to them contributes to improve the working conditions at the suppliers' premises. On the other hand, the buying firm achieves operational improvements from the implementation of SD practices. That is, in a more socially responsible firm (i.e., in a firm that works with its suppliers to improve the supplier employees' well-being), employees are more motivated, increasing their productivity and quality outcomes. In addition, the operational performance of the firm also increases as a result of improvements on the suppliers' social performance. That is, once the supplier social performance has improved as a result of the implementation of SD practices, the operational performance of the buying firm also improves. The economic performance of

the buying firm though, does not improve, suggesting that the implementation of SD practices in the short-term is costly for the buying firm and worsens its economic outcomes.

Overall, if we analyze with more detail the role of the suppliers' social performance, in order to answer RQ3, we can highlight the following facts. First, having suppliers that are socially responsible helps the buying firm to achieve better operational and economic outcomes. Second, buying firms can achieve additional improvements on their operational performance by effectively implementing SD practices. That is, better operational results can be achieved if the implementation of SD practices results in improvements for the suppliers' social performance.

RQ4. Is the effectiveness of sustainable SD practices consistent across different national cultures?

This last RQ analyzed the differences in sustainability performance outcomes as a result of the implementation of SD practices due to differences in country-factors. More specifically, the chapter analyzed the moderating role of national culture in the sustainable SD – buying firm's sustainability performance dimension.

The results suggest that while there is a positive relationship between SD practices on both the environmental and social buying firm's performance dimensions, this impact is influenced by the country's national culture. More specifically, masculinity negatively moderates the relationship between SD practices and both performance dimensions (i.e., environmental and social performance). This means that the positive impact of practices on performance is higher for countries scoring low in masculinity (i.e., high in femininity). In addition, the SD practices – social performance relationship is positively moderated by power distance. Thus suggesting that the positive social performance outcomes that result from the implementation of SD practices is higher for counties characterized by high power distance.

The implications of these results are discussed in the following lines. Masculinity, which refers to the distribution of roles between genders, plays a key role in determining the efficacy of sustainable SD practices both in terms of environmental and social performance dimensions. Masculinity countries are characterized by being aggressive and competitive, while femininity countries are characterized by emphasizing collaboration and value relationships. Thus, it makes sense that the efficacy of sustainable SD practices, which imply collaboration between partners, is higher in more collaborative-oriented practices. On the other hand, countries with wide acceptance of power inequalities are able to get better benefits on performance since the implementation of sustainable SD practices help to counterbalance the existent inequalities at the country level.

Overall, answering RQ4, SD practices are effective in terms of sustainability outcomes for the buying firm across countries. However, its effectiveness is higher in countries characterized by low levels of masculinity and high levels of power distance.

In the following chapter we highlight the contributions of the PhD Thesis and its main limitations. We also provide lines for further research.

Conclusions

This PhD Thesis has deepened into the understanding we have about the implementation of practices that aim to extend sustainability to suppliers by studying their antecedents and performance implications in a different set of outcomes. In that sense, this PhD Thesis has contributed to extend the existing literature on sustainable SD practices by including the social dimension of sustainability which has been generally neglected, by analyzing the effectiveness of these practices not only for the buying firm but also for the supplier, and by considering country factors in the analysis of both antecedents and performance implications.

More specifically, in the study of sustainable SD practices antecedents we contribute to the sustainable SC literature by extending the relationship between institutional pressures and the adoption of sustainable SC practices focusing at the country level. Countries in which firms are highly committed to sustainability there is more pressure to adopt practices that aim to extend sustainability to suppliers. In the study of antecedents we have also been able to highlight the key role of supplier integration as an enabler of sustainable SD practices adoption.

In the study of performance implications, we have contributed to better understand the effectiveness of sustainable SD practices. First, we have emphasized that in the study of their effectiveness it is necessary to consider both the buying firm and the supplier performance since practices impact differently on different performance outcomes. Second, we have been able to highlight the key role of suppliers' performance in the achievement of buying firm's operational improvements. Third, we have also shown the role played by national culture in achieving a sustainable SC and emphasized its importance in the sustainable SC management literature. In fact, the effectiveness of sustainable SD practices can be enhanced in countries in which there is high power distance and high femininity values.

We believe this PhD Thesis has also some managerial implications. These implications are divided into recommendations with respect to the adoption of sustainable SD practices and recommendations related to their effectiveness. On the one hand, regarding their adoption, managers need to be aware that what local competitors do in terms of sustainability will dictate the kind of practices to be adopted. It is important not to be left behind because the extension of sustainability to suppliers may be a way to compete. Also, sustainable SD practices will be easier to adopt in the presence of supplier integration. In that sense, managers can gain additional competitive advantage from firm related capabilities such as information sharing and joint management with their suppliers.

On the other hand, regarding the performance implications of sustainable SD practices, managers need to be aware of the following issues. First, the implementation of sustainable SD practices helps to improve the buying firm's social performance in terms of reputation. Companies willing to improve their social image can rely on the use of assessment practices and evaluate their suppliers in terms of sustainability issues. However, if they want to be sustainable across their SC, assessment is not enough and collaboration with suppliers is needed.

Second, the implementation of these practices will help buying firms to achieve better operational results. That is, by collaborating with their suppliers to improve social issues, buying firms can benefit from higher quality and delivery outcomes. Regarding economic performance, managers need to be aware that the implementation of sustainable SD practices is costly, however it helps to improve the suppliers' social performance. That is, managers can rely on the use of these practices, especially collaborative ones, to make their suppliers more socially responsible and hence extend sustainability along the chain. In that sense, managers need to decide which cost to bear: the cost of implementing sustainable SD practices or the cost of their suppliers behaving unethically.

Finally, for managers with plants located all over the world it is important to take into account cultural variables when implementing these practices. The effectiveness of sustainable SD practices may vary depending on the cultural characteristics of the country in which the plant is located.

Besides from these contributions to both research and practice, this PhD Thesis has some limitations that need to be acknowledged. First, the PhD Thesis employs survey based methodologies. The adoption of this methodology responds to the positivistic approach of the PhD Thesis and allowed us to test the proposed research hypotheses on a large scale; to study cause-effect relationships between different constructs such as institutional pressures and SD

practices or SD practices and different performance dimensions; and to analyze the role of variables such as national culture, supplier integration and supplier's performance on some of the abovementioned relationships. However, by relying only on survey based research we have not been able to deepen into the understanding of "how" and "why" some practices are effective, some variables play a key role on the effectiveness of sustainable SD practices and/or certain results are achieved. In that sense, further research should try to deepen in our results and better understand them by employing case study methodology. Second, the different databases used in our study employ data that is cross-sectional in nature. Thus, the different analysis we have performed do not account for possible recursive relationships between the constructs under study (e.g., practices and performance). Future research should try to use longitudinal data to overcome this limitation. Third, although we employed objective data to measure economic outcomes, we used self-reported data to measure environmental and social outcomes. In that sense, future research should try to include measures such as the level of CO₂ emissions and/or the number of accidents at the company/plant level when measuring sustainability performance to strengthen the validity and reliability of results. Fourth, throughout the different chapters of the thesis respondents have been buying firms. This means that we asked buying firms about their perceptions with respect to suppliers' performance. Although previous studies have analyzed suppliers' performance by relying on buying firm's perception (e.g., Akamp and Muller, 2013; Carter, 2005), future research should try to obtain dyads of suppliers and buyers. Fifth, related to the construct of suppliers' performance, we have mainly analyzed its role focusing on the social dimension. Future research should also study the effectiveness of sustainable SD practices and the role of suppliers' performance in the context of environmental sustainability. Sixth, we have highlighted the key role of national culture in the effectiveness of sustainable SD practices. However, we have just considered it for the buying firm. Future research should try to investigate if national culture also affects the sustainable SD practices – suppliers' performance relationship. Finally, we have focused on the adoption and effectiveness of sustainable supplier development practices for manufacturing firms. Therefore, our results are not applicable to service firms. Future research should try to include both type of sectors in their studies and analyze potential differences.

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SECOND AWARD

Social Foundations of Sense Making; Four case studies

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Abstract

This summary outlines key findings from a doctoral thesis successfully defended in 2015. Those findings demonstrate how an organisation in the creative industries is enmeshed in a greater system of creative action. The paper conceptualises three dimensions, the 'creative self' as the dispositional aspect, 'the social self' as the notion of sociality, social identity and identification and the 'creative system' as the dynamic that sustains creative behaviour. These combine in the challenging question who is the real architect when it comes to organisational design, structure, purpose and processes. The summary concludes with implications for theory and practice.

1. Motivation

The motivation for this study followed meetings with the managing directors of three creative / interactive agencies that took place in the UK in 2010. The topic was organisational sense making, that is, how the agencies (as organisations) made sense of their business environment, the Internet, a phenomenon of seemingly endless creativity and innovation but also an unpredictable environment that evolves through the collective actions of millions of users.

Those meetings (probes) turned up a set of problems. Strategy, sense of order, unity of purpose, leadership and organisational identity, all seemed less important than what organisational members were actually up to. Those members are '*new media workers*' or '*digital artisans*' (Terranova 2000). Their trade is programming, multimedia, content creation, graphic design and other forms of creative enterprise by digital means. They were described as networked, dynamic but self-centric individuals who viewed their membership as a temporary condition.

Still, the organisations had in the past been successful by virtue of their continued existence and some of the organisations (but not all) achieved their objectives (growth, profit, reputation) despite significant internal incongruences and external interference (i.e. technological discontinuity).

The conclusion was that creative / interactive agencies are an interesting but unexplored phenomena that seem (in some aspects) to contravene the conventions of management. They have an innate dependency on resources with certain traits and properties (skills, knowledge and capabilities) that seem less committed to them as to their own mandates. They are structurally complicated and multidisciplinary and yet in an anarchic way they survive prospering in turbulent circumstances, which may in itself represent an innovative reaction to poorly understood conditions (Von Hippel, 1988).

The objective of the study became to explore those traits, properties and conditions with the possibility of using them in the future as a basis for a computer simulation (agent based model) that would recreate organisational dynamics based on empirically grounded findings. The research question was therefore broadly defined.

Q1 - How do creative/ interactive agencies as organisations internally make sense of themselves and by the way their industry as a networked information and knowledge intensive environment?

And

Q2 - How do informal external associations influence and impact sense making in creative / interactive agencies?

The empirical target was

- a) What traits and properties characterise new media workers?
- b) How are they influenced and affected by their social networks?
- c) How and why do new media workers select to negotiate their differences and to cooperate with each other?
- d) What is it about the organisation that convinces or enables them to do so?
- e) How does this affect the organisation as a collectively meaningful and purposeful enterprise?

2. Theoretical background

To scope the problem, the researcher turned to the literature on sense making in organisations. This literature originates in systems thinking i.e. the idea of organisation as a system of interdependent components that when working properly, produces something greater than the sum of the components. The problem of course is that some of the components (people) have values and norms that may constitute in a decision not to perform a function or not to cooperate with other components (people) in the system (or to do so ineffectually).

Sense making in organisations is conceptualised as the parallel processing of multiple inputs, processes and contexts, Figure 1.

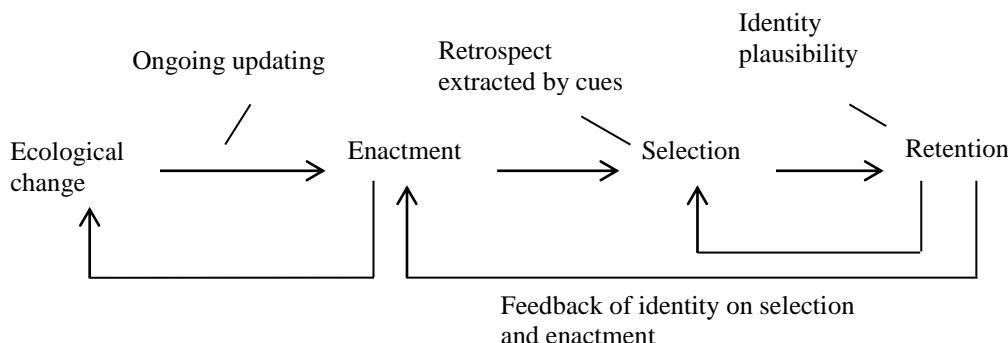
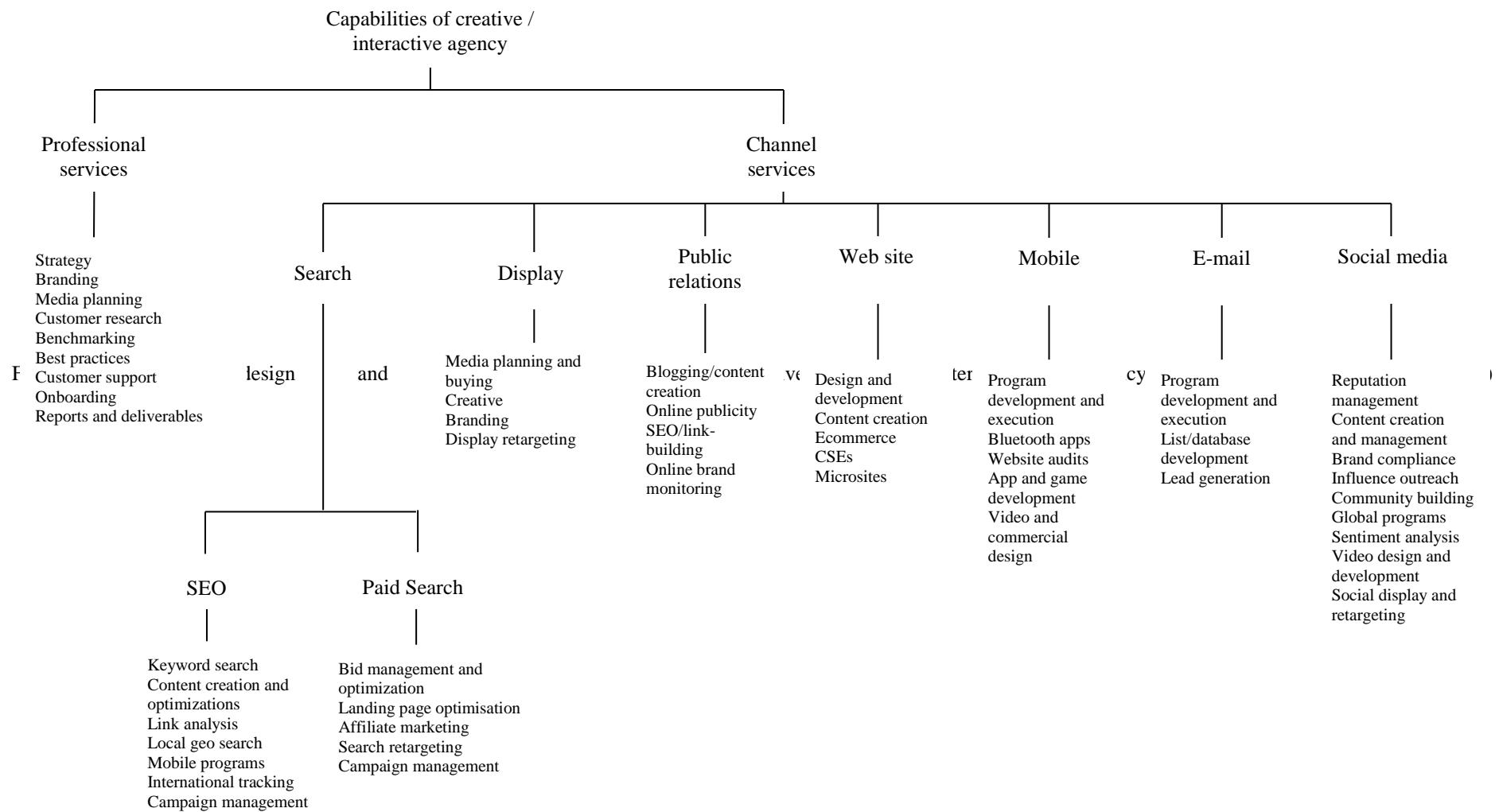


Figure 1 A process model of sense making in organisations from (Weick et al. 2005:414)

The model has systemic properties but incorporates subjective dimensions. It situates the self (identity) and sociality at the centre and the act as essential to sense making i.e. one only really knows in the aftermath of action. In this model, sense making in organisations (as a theoretical framework) has evolved to straddle systems theory with psychology and social psychology targeting the nexus between identity and sociality with a twist of pragmatism.

3. A brief introduction to the industry

Creative / interactive agencies are not great digital innovators, but they work in the slipstream of those that are. They are essential to the development of a healthy and vibrant digital economy bridging the divide between traditional industry and a digital future. Their world is a complex data driven environment where conventional understanding of value creation, organisation, management and leadership is challenged by the impermanence of the product, maverick networked employees and an organisational system of indeterminate boundaries and random path dependencies. As the Internet has expanded in scale, scope and complexity, the creative / interactive agency has also become an increasingly sophisticated and resource dependant organisation that often resembles larger organisations in structure, task and institutional complexity, Figure 2.



4. Research design

Research designs tend to emphasise the duality in social science and the Weber / Durkheim divide i.e. whether one should focus on individual (micro) or collective (macro) phenomena (Sawyer 2001). This research straddles that divide exploring how an organisation is affected by the dynamic interplay between individual phenomena (micro) and social phenomenon (macro). The unit of analysis is not just the observable effect of interaction between the two but the flashpoints and path dependences that create those effects, Figure 3.

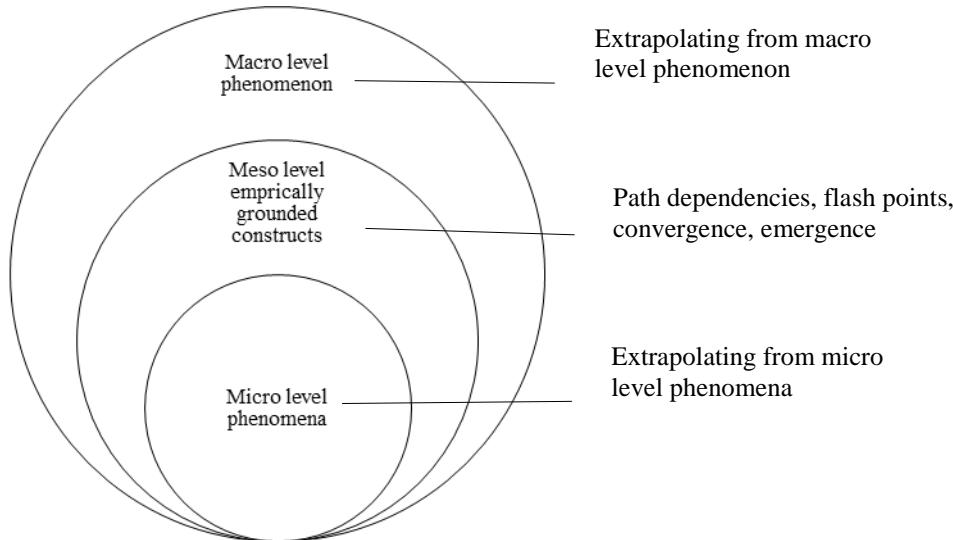


Figure 3 Straddling the macro / micro divide

The research design was a qualitative longitudinal multiple case study that unfolded over two years. Four cases participated and primary data was produced in depth interview sessions augmented by mental mapping sessions, studying interactions on electronic social networks (microblogs) and by informal correspondence. Because the objective of the research was to unlock subjective knowledge domains, the interview was the natural primary method as the '*prototypical case of social interaction*' Berger and Luckman (1966:43). The respondents were from different levels of management although most were creatives that had achieved a management position.

Cases and individual participants were specifically chosen based on informed judgement about their potential contribution guided by theoretical requirements (Eisenhardt, 1989). The investigator followed significant leads in the data when those emerged and the study appropriated methods from grounded theory i.e. *theoretical sampling*, or collecting data to the point when new data ceases to turn up new insights, '*theoretical saturation*' (Glaser and Strauss, 1967). All interviews were transcribed personally by the investigator and analysed aided by computer assisted software (NVIVO) in a three step process.

- a) The data was initially analysed (coded) *In Vivo* line by line.
- b) Certain *In Vivo* codes were then clustered according to the constructs they were deemed by the analyst to represent.
- c) Each cluster was then treated with a coding framework that was used to detect and analyse micro instances in the data.

- d) Those instances were assembled in focused codes representing abstract instantiations of traits, properties and processes that underpin a theoretical category

Each case was analysed individually and then compared to the other cases to establish cross case correspondence (Eisenhardt, 1989).

5. Data treatment, coding and analysis

In Vivo codes are characterised by their often vivid imagery (Strauss 1987). They already possess meaning in the concepts they represent. Consider an excerpt from one interview, Table 1.

Table 1 Example of *In Vivo* coding

Paragraph	<i>In Vivo</i> codes
Bear in mind that we had at this stage a very command and control kind of structure within the business with a middle team management that we had established because we felt we should be doing that sort of thing and what happened is that it comes down sort of the chain and we have got these silos going on with certain inefficiencies	<ul style="list-style-type: none"> – <i>In Vivo</i> code – Command and control – <i>In Vivo</i> code – The chain – <i>In Vivo</i> code – Silos going on – <i>In Vivo</i> code – Certain inefficiencies

The narrative (even out of context) indicates a problem captured in *In Vivo* codes '*command and control; the chain; silos going on; certain inefficiencies*'. Those are concept indicators that suggest flawed structures and inefficiencies. After all transcripts had been *In Vivo* coded in this way, the investigator explored the contextual backdrop behind each *In Vivo* code. The *In Vivo* codes that seemed to share a context were clustered together under the heading of one particular *In Vivo* code (the one that best represented the phenomenon and context).

Miles and Huberman (1994:249) call this the task of considering '*which things go together and which things do not*'. These clusters constitute preliminary concepts that identify major domains within the data, Figure 4.

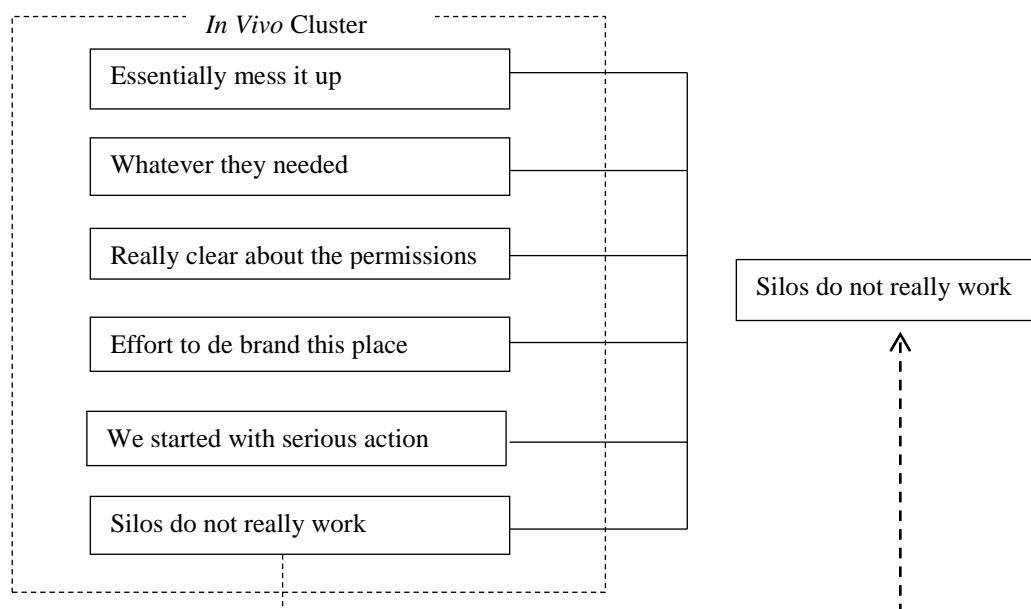


Figure 4 Clustering of 1st cycle *In Vivo* codes

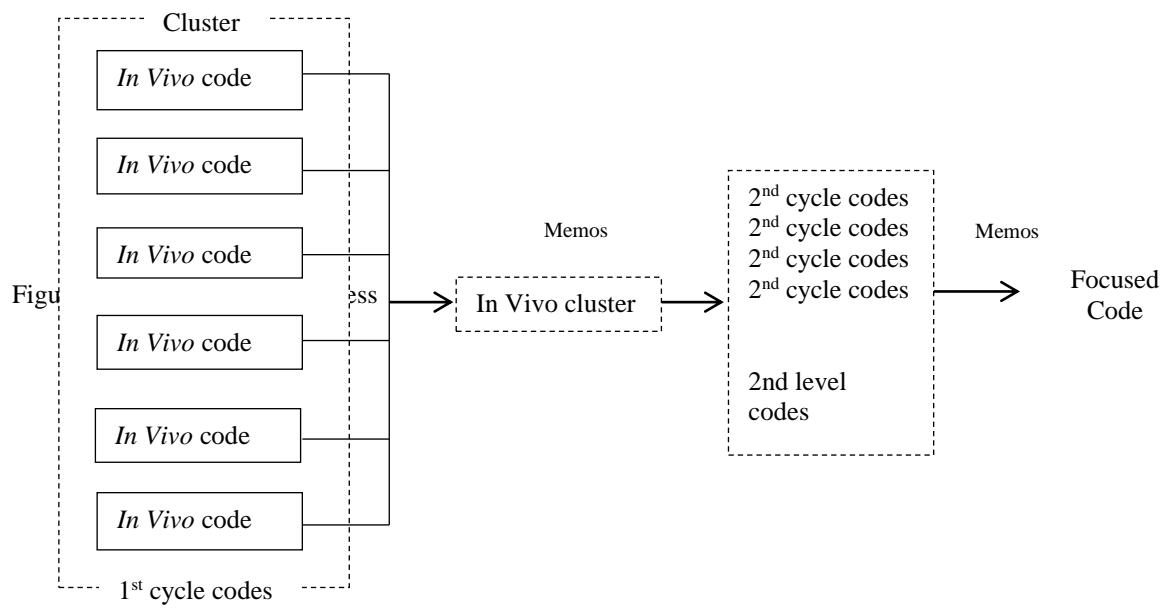
After the entire data set had been *In Vivo* coded and clustered, each cluster was analysed using an improvised coding template found in (Strauss 1987). The template is used to sift through data looking for a set of indicators.

References to identity '*I*' or the collective '*We*' and '*They*' can be further explored where the narrative suggests shared meaning and purpose '*what we do*' or '*where we want to be*'. The analyst scans for soft conditional statements e.g. '*because things move quickly*' where '*because*' indicates the presence of a particular condition '*speed*' and for processes expressed in *gerunds* e.g. '*running*' or '*talking*' (Saldana 2009), Table 2.

Table 2 Coding template and application

Dimension	Indicators	Examples
Identity	I / We Who we are What we do What we are about Where we want to be	[I] have got to understand [I] have started to think differently [I] know everything [We] wanted to be doing brilliant brands and be famous [We] jumped ship
Conditions	Because / If Since / As / Had to For that reason No choice	[Because] we had a belief in what we were talking about Testing goes out the window [because] you have no time [Because] we were still in turmoil we didn't [If] we don't keep up other people might overtake us
Processes	Purposeful - tightening / driving Intentional - going / intending Processional - walking / looking	They are [telling] me what is going on because they read forums They are [getting] information It was a case of [listening] to them

The final step constructed focused codes '*using the most significant or most frequent earlier codes*' (Charmaz, 2006:57) Focused codes concentrate earlier codes in a single construct that captures and instantiates the key dimensions and dynamics of a phenomenon. Analytic notes or memos were used to bring the findings into clearer focus thus generating theoretical propositions. The entire coding process is visualized in Figure 5 and Figure 6 that gradually develop the data into higher level (abstract) categories which describe major theoretical domains.



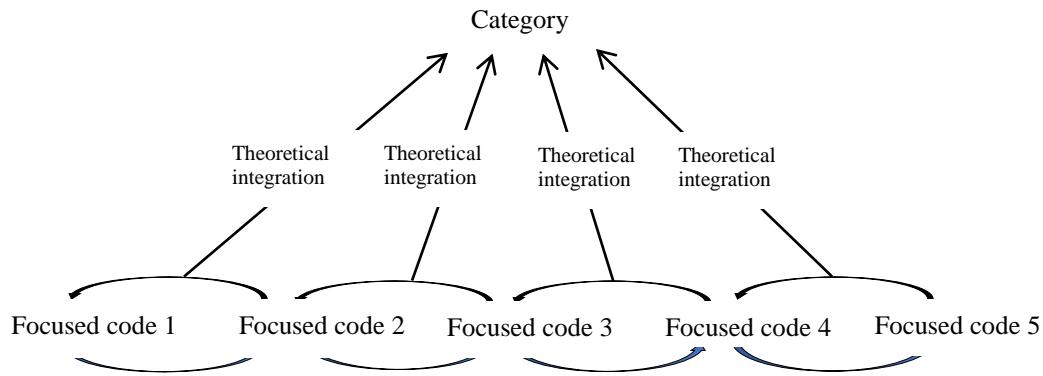


Figure 6 From focused code to category: Adapted from (Strauss 1987)

6. Findings

Conditional references in the data (*because, since, if, etc.*) signify conditions that constitute the context of action and behaviour (*e.g. not wanting to work there, because the stuff they were doing was not very cutting edge*). This statement enters a different dimension when embedded in a wider context of a creative system that conditions the individual's reasoning process. That same system conditions the individual's valence towards the organisation. The organisation has to be a legitimate agent of creativity that rests on the type of work it does, the associations it has and the individuals it employs. All this has to be considered in the context of radical change (the Internet) that is the empirical canvas of this inquiry.

7. The empirical canvas

I mean the way that the consumer has responded to Web 2.0 and the content tools and content generators and media space that is larger than the media space of all the other media space combined] and that is enormous and has revolutionised the whole of the marketing world (R1)

The passage illustrates how Web 2.0 has made the consumer the main generator of content and interaction. Value is created in online activity and social exchange. The organisations are challenged by the scale, scope and speed of change. Web 2.0 has turned the Internet into a truly social forum that has in turn escalated its spread and complexity. Institutions have not yet caught up with new systems of thought, ways of working and a demand for new skills. The narrative describes the intensity of the competition '*battleground...because we would be competing for the same talent*'.

Table 3 The environment:

The environment

Macro level phenomenon	Meso level constructs	Micro level phenomena
Change	<ul style="list-style-type: none"> - System scale - System scope - Rate of change - Resource scarcity 	<ul style="list-style-type: none"> - Uncertainty 'it is massive...phenomenally complex' - Convergence 'because fundamentally it has the capability to join things up' - Stress 'because we could be out of business in 12 months' - Competition 'the battleground for agencies up her in the North West'

Four conditions are observed.

- The *scale, scope* and *rate* of change create uncertainty and selection dilemmas. Investments in strategies and capabilities can sink with the arrival of new technologies that diffuse rapidly through electronic networks
- The exponential growth of the Internet has created a demand for digital labour that exceeds supply. A key challenge is to attract and retain skilful individuals.

That problem of skills was a consistent theme describing a nomadic type of individual '*geek*' who drifted from one agency to another on the belief that the projects be more interesting and worthwhile '*the grass is always greener*'.

8. The creative self

Creative goal, I made this, I did this and my work is on the front page of the [...]. I won this award and the intellectual challenge. The reason people work here is that they will work on something they have not done before (R 4)

I like creating something from nothing that's always what has been amazing about computers it is from nothing and then to see someone using it and to see it in situ or to hear of people having used it and it works for them that is what I really enjoy (R 8)

The paragraphs describe the need for self-actualisation '*I made this*' ; '*I like creating*', appreciation '*see it in situ*' ; '*I won this award*' and the strategic problem in the provision of conditions that facilitate that creative call '*the reason people work here*'; '*because certain people react to certain things*'.

The reference to a condition '*because certain people...*' denotes the peculiar individuality of each employee that manifests in certain expectations that must be met '*or they will leave because they get frustrated*'. The analysis portrayed a creative personality, a volatile, self-directed individual who dictates own terms.

Table 4 The creative self

The creative self			
Macro level phenomenon	Meso level constructs	Micro level phenomena	
Creative personality	<ul style="list-style-type: none"> - Ambitious - Egotistical - Self-directed - Imaginative - Idealistic - Spontaneous - Sensitive 	<ul style="list-style-type: none"> - Motivated '<i>I did this</i>' - Personal agendas '<i>like to do stuff themselves</i>' - Non-committal '<i>will leave because they get frustrated</i>' - Rebellious '<i>don't act the way you want them to</i>' - Volatile '<i>need to be managed gently</i>' 	

Three conditions are observed;

- A sense of self as creative '*I like creating something from nothing* ; '*I made this*' ; '*seeing it in situ*' which also suggests some mechanism of endorsement
- The non-uniformity (heterogeneity) of the organisation (*certain people react to certain things*).
- A set of expectations about the working conditions (*or they will leave because*) where the individual's commitment to the organisation depends on a set of conditions that supports creative activity.

It suggests a social mechanism that endorses, encourages and sanction creative behaviour.

9. The social self

My loss is that it was something that was very beautiful and it was very different to what we usually do...and the community aspect of it that never happened...our peers will never see what we have been labouring over (R 8)

The social self, conveys the convergence of the creative as an individual and creativity as a social phenomenon. The opening paragraph describes how creativity ultimately is socially ordained '*the community aspect that never happened*'.

Remuneration is the recognition that the creation is exemplary '*very beautiful*' and that the intellectual effort and authorship is recognised and endorsed. The cost of keeping creativity under wraps is expressed in social currency '*our peers will never see what we have been labouring over*'.

Table 5 The social self:

The social self		
Macro level phenomenon Social conditioning	Meso level constructs <ul style="list-style-type: none">- Identity- Membership- Reputation- Risk- Loss	Micro level phenomena <ul style="list-style-type: none">- Identification and belonging '<i>I really loved it</i>'- Values '<i>quite boring stuff really</i>'- Norms '<i>prove the value by doing</i>'- Logic '<i>if people don't get what they are expecting</i>'- Cost '<i>our peers will never see</i>'

Two conditions are observed.

- a) A social mechanism, a community of professionals with strong values and norms that incite and sanction behaviour.
- b) A concern with reputation and maintaining rank and status within that social order.

Combined the analysis captures the convergence between individual behaviour and collective values and norms and how the individual must adhere to those to be a legitimate member of that creative class. Proof of competence is in the creative artefact '*prove you actually got that ability*'. An unfortunate consequence of this is that organisations that do not provide the necessary creative conditions are vulnerable in a networked industry where headhunting is widespread and where individuals follow the creative momentum.

The data illustrated the interlocking of relations that constitute a span that extends far outside organisational boundaries '*I was more and more aware of...what those guys were doing*'. Management is only superficially in control and must maintain an interesting portfolio of projects, one that enhances the creative credentials of those involved. Mundane projects are a deterrent, a worker will defect from an organisation considered to be in creative decline '*not wanting to work [there] anymore because the stuff that they were doing was not very cutting edge or visionary*'. Ironically, no one seems to identify with the organisation, only people of the same ilk that work there. The narrative underlines the sway of the social system and the deviation amplifying loops that stimulate creative action sustaining the system in a perpetual process of comparative distinctiveness.

10. The creative system

Constantly trying to do things in a different way and doing things differently and do it in a kind of perceived innovative way and you are making and striking a difference in being out there and showing yourself doing interesting crazy ideas that has that snowball effect (R 6)

Comparative distinctiveness '*doing things differently*' and '*making and striking a difference*' drives the evolution of the system '*the snowball effect*'. It is dominated by positive feedback

effects '*doing interesting crazy ideas*' that distinguishes the creative from peers (Maruyama 1963).

It is a system where members of a professional class work together to further their personal and collective agendas '*sharing, seeing things, coming up with a solution, collating ideas*'. Certain *core* members '*blue sky thinkers*' shape the narrative through demonstrated expertise and dedication to the cause (Borzillo et al. 2012). Shrewd members strategically appeal to the ego of core members '*dangling a nugget*' to get them to share information.

The organisations depend on employees and their peer to peer networks which then makes the employees key to unlocking knowledge domains that would otherwise remain out of reach or unknown. The organisation cannot breach or buy into a knowledge domain since one must be a proven member of that professional class to gain access and to appreciate the inarticulate (tacit) knowledge of the discipline regarded (by some) as the root of all organisational knowledge (Nonaka and Takeuchi 1995). Consequently crafting teams in a mindful combination of technical and social profiles '*really knowing the types of people that we want*' may be the single most important decision a manager makes because it determines the scope of information and knowledge available to the organisation.

Table 6 The creative system

The creative system		
Macro level phenomenon	Meso level constructs	Micro level phenomena
Relational networks	<ul style="list-style-type: none"> - Communities of knowledge - Communities of practice - Amplified feedback - Bandwagon - Heterogeneity 	<ul style="list-style-type: none"> - Knowledge transfer '<i>we can ask outside our little circle</i>' - Collaboration '<i>you are only going so far on your own</i>' - Comparative distinctiveness '<i>doing interesting crazy ideas</i>' - Participation '<i>it just kind of absolutely snowballs</i>' - Progress '<i>if you get a new person that thinks in a totally new way</i>'

Three conditions are observed.

- Organisational members are embedded in relational networks of practitioners i.e. communities of knowledge and practice which both incites and sanctions their behaviour.
- A prerequisite to continued membership is to demonstrate creative competence, measuring up to others (comparative distinctiveness).
- The organisations depend on their employees peer to peer networks to sustain them with information and knowledge about the digital space.
- The internal composition of the organisation (its creative heterogeneity) is a key consideration (because it facilitates access to multiple knowledge domains)

11. Contribution to knowledge

This study adds to the extant literature on new media workers (e.g. Terranova 2000; Kennedy 2010; Gill 2005), knowledge intensive organisations and knowledge workers (e.g. Alvesson, 2000) and the hacker culture (Raymond 1999). It also qualifies as an historical account that captures a period in the evolution of a new industry and the phenomenon that is the creative / interactive agency as an intensely networked yet poorly understood organisation.

On the question of sense making, the study provides a brief glimpse into a complex environment (the digital space). On its frontier are individuals that thrive and are stimulated by the prospect of participating in the action, solving the puzzle and being recognised for their competence (Raymond 1999).

Because the environment is complex, the remit of delivery is complex reflected in an agency's internal disciplinary complexity, Figure 2:4. It recalls the theoretical concept of *requisite variety* which posits that a solution has to have properties that reflect the problem it is intended to solve. A solution that does not have the right properties (or a combination of properties) will be less able to solve the problem. In other words, an agency's internal composition (heterogeneity) determines its ability to solve problems, separating the *wheat from the chaff* when confronting uncertain futures but not by just matching the spanner to the nut, but having access to creative individuals who have creative credentials that unlocks knowledge domains and makes the organisation attractive to other creative individuals. Each of those represents values and norms that constitute in a set of expectations, personal agendas and social commitments (embeddedness) that influence the workers valence towards the work and the workplace,

Figure 7:16.

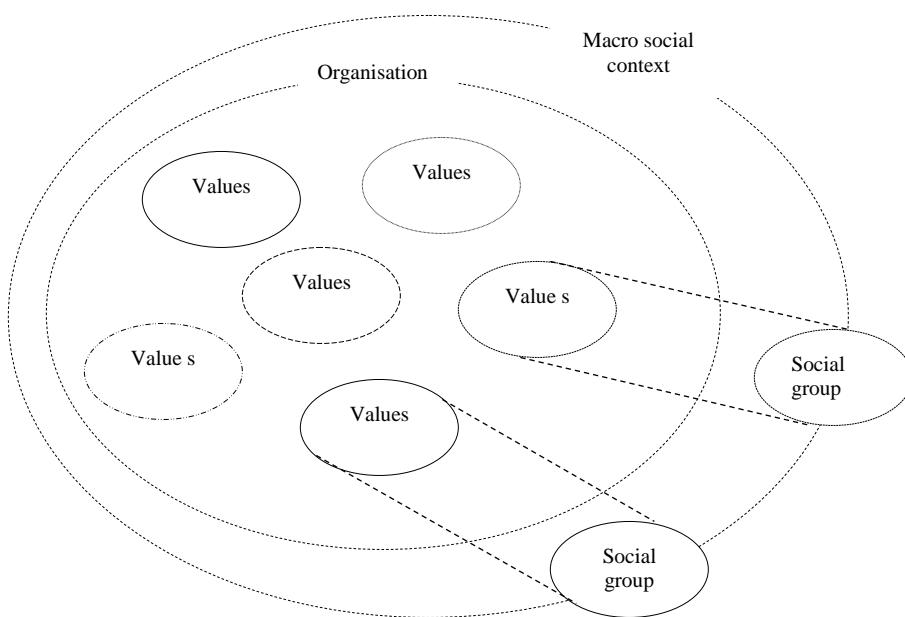


Figure 7 Social embeddedness of employees: Adapted from (Haslam 2004)

The creative / interactive agency is in fact a cooperative of hackers each embedded in a relational network, locked in a dynamic system of comparative distinctiveness where members appropriate creations supplanting them with their own modified edition in an attempt to outclass other members of that system. Consequently, the organisations do not progress strategically or with a sense of collective purpose other than the collective understanding that the work is worth the effort. Employees (for their own selfish reasons) use the organisation as a collective resource that enables them to demonstrate their imagination and competence. What sense there is must be that members agree to cooperate because they share an interdependence that enables them to perform individually. They do not require a collective goal, only a mutual understanding of that interdependency (Donnellon et al, 1986).

12. Practical contribution

In popular perception, organisations are defined by their leadership and management (Smircich and Morgan 1982). It runs something like this

- a) It provides a sense and direction, installing values, meaning and understanding of objective
- b) It frames the reality of others and scopes action possibilities within that framework.
- c) Leaders and managers are the architects of meaning and their principle role is to persuade people that their interests and the organisations are the same so enticing them to cooperate.

In this study, management reacted in distinctly different way to the dynamics described. One manager (a creative) described the management process as '*running in the dark*' and trying to '*build a story*'. Another (a project manager) described a confused search for a heuristic that would provide direction '*see evidence of it being worthwhile*'. The third (a sales director) focused on enforcing his span of control '*our measurement has been there from day one*' and one case (run by an economist) focused on external associations. The first and fourth, understood the leverage of creative identity (e.g. comparative distinctiveness, reputation etc.). The second (now defunct) and the third (now changed hands) were managed along traditional lines sanctioning the actions of employees. Findings here suggest those employees have less need and no tolerance for interference and managing them should be more a matter of '*orchestrating expertise and relationships*' (Mumford et al. 2002), providing space for '*creativity and exploration*' (Boden 2005).

The caveat of comparative distinctiveness

It is conceivable that comparative distinctiveness can escalate to a self-perpetuating dynamic of dissidence where creative individuals enact their creative identity as a member of that creative class with no concern for others including the organisation. This becomes even more important were certain types (super creatives) may both attract and exert influence over other members precisely because they enact their role as creative dissidents. The irony is that heterodoxy is a vital and valuable asset as a creative force but one that can and probably will destroy the organisation i.e. '*creative destruction*' to set a popular conception to a slightly different context. The answer is for managers to appreciate the deeper properties (values, norms and sociality) of employees, who they are and what they care about, tapping into their instinct to perform.

Table 7 Conditions, traits and properties: Indicators

Conditions, traits and properties		
<p>The creative self What are the identifiable (individual) properties of creative actors?</p> <ul style="list-style-type: none"> – Presentation of self – Personal agendas (self-directedness) – Enacting creative identity – Demonstrating dissidence – Efficacy – Narcissism 	<p>The social self What are the identifiable (social) properties of creative actors?</p> <ul style="list-style-type: none"> – Preservation of self – Collective agendas – Demonstrating skills and competencies – Social conditioning (measuring up to a socially ordained system of proficiency and achievement) 	<p>The creative system What are the identifiable (collective) properties of a creative system?</p> <ul style="list-style-type: none"> – Comparative distinctiveness – Amplified feedback powers change as members compete to demonstrate competence and creative proficiency – Members are compelled to participate in the feedback dynamic to remain intellectually and professionally relevant

13. Conclusion

To conclude, sense in a creative / interactive agency is created in the spontaneous reaction to social conditions and not a process initiated, requisitioned, controlled or even condoned by management. Organisational sense (as objective, strategy and unity of purpose) is not a necessary condition for the continuity of the organisation. In fact, organisational sense may alienate employees who are deterred by the mundane and attracted by the lack of specific direction and a willingness to explore and tinker. Uncertainty affords the creative person with a licence to explore alternatives i.e. creative problem solving takes place under conditions of uncertainty (Cooper 2000).

As it stands, the findings are *domain specific* (they apply to a particular research setting) as a qualitative primer and initial diagnostic of a complex and vibrant social system waiting further elicitation.

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THIRD AWARD

Experts' Predictive Power

An Empirical Study on Expert Forecasting

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1. Introduction

Forecasting is a critical factor for developing foresight, formulating strategies, planning effectively and, in general, succeeding in business (Makridakis, 1996). Among various approaches, expert forecasting is particularly appreciated by practitioners for its convenience, as it provides fairly accurate forecasts at a comparative low cost. A number of studies prove that judgment remains a popular approach among practitioners, especially when dealing with a short-term horizon (see for example Dalrymple, 1987; Mentzer & Cox, 1984; Sanders, 1997; Lawrence et al., 2002; Sanders & Manrodt, 2003; McCarthy et al., 2006). The method even proved resilient against the increased availability of statistical procedures, and the easier and cheaper access to forecast software (McCarthy et al., 2006). If usage is adopted as proxy for relevance, expert forecasting is hence undoubtedly a relevant tool for business.

The widespread use of the Internet and ICT developments offer unprecedented opportunities to further spread the use of expert forecasting, as large numbers of individuals can be involved in collaborative tasks at reasonable costs (Segaran, 2007). Recently, expert forecasting methods proved particularly efficient in leveraging collective intelligence from groups of individuals, regardless of their expertise (see for instance Gottschlich & Hinz, 2014; Kaplan, 2001). Empirical applications are particularly popular in finance, where prediction markets have emerged as a promising way to collect accurate information from dispersed individuals (Rhode & Strumpf, 2004; Wolfers & Zitzewitz, 2004). Prediction markets proved particularly effective in aggregating asymmetrically dispersed information, through Internet-based platforms, even with small and non-representative pools of participants (Kambil, 2003). Empirical uses of this approach can be found in virtual investing communities, which allow members to provide their guess about a share's future performance in a structured way, as in websites such as CAPS¹ or sharewise². With the rapid spread of the Internet worldwide, techniques for processing

¹ caps.fool.com.

² www.sharewise.com.

knowledge in collectives are increasingly needed (Maleszka & Nguyen, 2015).

A distinctive trait of expert forecasting methods, which leverage collective intelligence, is the undifferentiated weight assigned to forecasts provided by different panel members. The collective forecast is typically obtained by simply averaging all forecasts, to let each group member equally contribute to assemble a realistic portray of reality. Collective intelligence is not independent of the individual it consists, what makes the assumption that all individuals possess equal knowledge (or forecasting skills) a particularly restrictive one. This is especially true in a panel setting, where panel members have the opportunity to learn from their experience and improve their skills over time. Such an assumption also eludes sophistications required by a dynamic concept of expertise, as forecasting skills and background knowledge, which are relevant to produce accurate forecasts, may realistically change in a varying operating environment.

The research presented in this dissertation pursues the goal of improving the quality of expert forecasting forecasts over a short-term horizon. Empirical results provide meaningful directions to practitioners on the opportunity-cost to produce short-term forecasts regularly, using alternative approaches. It also contributes to fill a gap in the tourism-related literature, with an assessment of the contribution sentiment indexes can bring to forecasts tourism demand for large regional aggregates, an unexplored topic so far.

2. Methodological approach

The methodology presented in this dissertation moves from an “average forecaster” approach to the individual level. Individual expertise is herewith conceived as both a relative concept, defined at each round against the group performance, and a vector quantity, defined over time by changes in an individual's performance. Levels of expertise are hence the combined value of experts' *accurateness* and *reliability*. The former measures individuals' capability of producing estimates close to the actual value, and is inversely proportional to their forecast error. The latter is an assessment of what Sniewzek (1989) defines as intra-individual validity, or experts' capability to provide accurate predictions regularly over time.

Formally, individual *accurateness* is measured as (1a):

$$w_i = \sum_{i=1}^I |e_i| / |e_i|_{w_i} = \sum_{i=1}^I e_i / e_i \quad (1a)$$

Where w is the weight associated with each individual i , and is the reciprocal of the ratio calculated between the group error and the individual error at each point in time³. The lower the individual error, in comparison to the group performance, the higher the weight attributed to the individual. Individuals providing a forecast equal to the actual value are assigned by default the maximum weight ($w_i = 1$).

The *reliability* component is introduced by exponentially smoothing each user's weight over a period of time, which can be formally expressed as (1b):

$$w'_{i,t} = w_{i,t} \alpha + (1 - \alpha) w'_{i,t-1} \quad \text{for } t > 0, \text{ else } w'_{i,t} = 1 \quad (1b)$$

For each period t , each expert i is assigned a weight w' expressed as the exponentially smoothed sum of the error in time t and the weight (i.e. the exponentially smoothed error) in time $t-1$.

³ Forecast errors are calculated as the difference between the actual and the forecast value.

Individuals who join the panel for the first time are assigned a neutral weight of 1. Smoothing parameter α is optimised to minimize the mean absolute error (MAE) of the aggregated forecast. Values of α close to one give greater weight to the accurateness of most recent forecasts, while values close to zero introduce a long memory in the algorithm, and return an assessment of expertise based on the long-term performance.

With this approach, expertise can be conceived as a granular concept. The algorithm also introduces a dynamic component, as weights are calculated at each round to include most recent information. Changes in individuals' level of expertise, due for instance to personal development (Lock, 1978) or additional information become available, are captured and used to optimise the compound forecast. This latter component provides a level playing field for each panel member, as it mitigates the horizontal impact unexpected events, as for instance the recent global economic crisis, may have on the performance of each individual.

If past performance may sound as an obvious proxy for expertise, empirical evidence proving its applicability is definitely scarce. Most published studies in the expert forecasting literature focus on cross-sectional data derived from one-off studies, and very few studies assess take advantage of longitudinal datasets to assess the efficiency of expert identification methods.

The proposed methodology has been tested on the United Nations World Tourism Organization (UNWTO) expert forecasts and statistical database. Since 2003, UNWTO has been collecting retrospective and prospective evaluations of tourism performance from hundreds of individuals recruited through the organisation's global network. Evaluations and prospects capture panel members' opinion on the past and future development of the tourism sector, compared to what could be reasonably expected for the period of reference. Changes are measured on a 5-step Likert (1932) scale, and collected by the means of an e-mail questionnaire. Waves are conducted three times a year and consist of a single round survey. Once a year, evaluations and prospects for the full year are also collected. Panel members are conveniently recruited by the UNWTO Secretariat, based on their professional background, without any formal assessment of the candidate's expertise with the forecasting task. Since the second quarter of 2003, when the survey started, 1,127 experts participated in the 33 waves conducted to date. The number of experts grew exponentially over time, moving from some hundred individuals participating in the first wave to over 300 participating in the second wave of 2009. Since then, the average number of panellists stabilized around 320 experts per wave. A considerable number of experts regularly provide estimates for the series Europe (119), Americas (72) and Asia and the Pacific (64), while samples for the series Africa (20) and Middle East (14) are on average much smaller. This represents a unique set of data to test the proposed approach in a real-life setting and on a worldwide scale.

3. Hypotheses

Is there such a thing as expertise? The body of knowledge in the domain of expert forecasting suggests that it exists, and that it is relevant for forecasting. Following Helmer's (1958: 30-32) reasoning in his seminal work *On the Epistemology of the Inexact Sciences*, knowledge of past

instances, together with background knowledge⁴ and a “refined sensitivity of its relevance” are empirical manifestations of the construct expertise. Such characteristics further determine individuals’ capability to make accurate statements about the probability for future events to occur. “The informed expert”, he states, “is best able to carry out the application of quasi-laws necessary for reasoned prediction”. Helmer also sets the framework for the identification of experts. Expert judgment, he states, is not incompatible with scientific objectivity, insofar as the selection of experts is objectively justified by their past performance or, in absence thereof, by the expert background knowledge or reputation.

Expertise is since believed to be a determinant of accurate judgmental forecasts. Figure 1 illustrates those factors, which can influence the accuracy of judgmental forecasts in a model suited for expert forecasting tasks supported by a forecast support system - the focus of this piece of research. The model considers factors that can influence accuracy of a judgmental forecast both as final output of the forecasting task and as input in an aggregation or combination process.

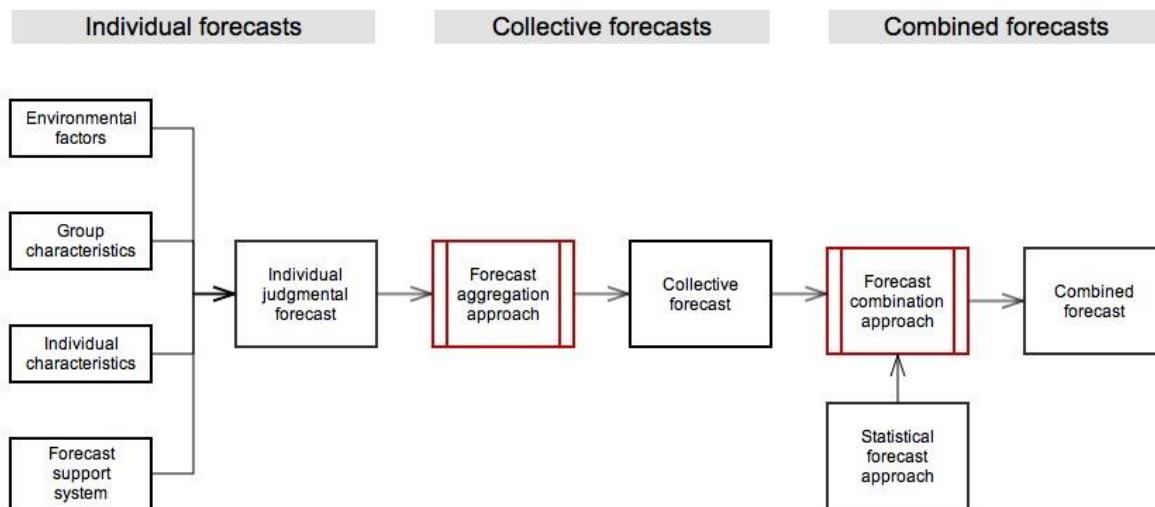


Figure 8 - Factors influencing the accuracy of judgmental forecasts in a task supported by a forecast support system (source: author).

Whenever methods harnessing the collective intelligence of large groups of people are used, individual and group characteristics are believed to be of negligible importance. The principal assumption of collective intelligence is indeed that dispersed individuals possess fragmented pieces of information, and that the sum of their knowledge corresponds to a picture nearer to reality than that provided by each piece. Applied to forecasting, collective intelligence can be understood as the capability of a large group -or a population- to make forecasts, which are collectively more accurate than estimates provided by the individual part (Hong & Page, 2011; Surowiecki, 2004). In this view, the scope of an individual's background knowledge (as understood by Helmer) is by definition not relevant in determining the quality of the final output,

⁴ Helmer defines background knowledge as “knowledge of regularities in the behaviour of people or in the character of institutions, such as traditions and customary practices, fashions and mores, national attitudes and climates of opinion, institutional rules and regulations, group aspirations and so on”.

as the collective is designated to make up for knowledge gaps. In this context, the attention necessarily shifts to the process used to achieve a collective forecast. If individual judgment is used as input for a collective forecast, the aggregation process comes into play and impacts on the eventual accurateness of the compound forecast. The same applies when the collective forecast is eventually used in combination with quantitative forecasts.

Questions addressed by this piece of research focus on the impact of alternative aggregation and combination techniques on the accuracy of the collective forecast, when produced through a collaborative approach involving large numbers may horizontally affect all of individuals. The principal hypothesis is that a forecast aggregation process, that calibrates forecasters' contribution based on their past performance, returns more accurate collective forecasts than a simple average or the median value of individual judgmental forecasts. The main assumptions underlying this hypothesis are that past errors are a good predictor of the expected level of expertise each individual will manifest in the following round (expert identification process), and that levels of expertise can be used to weight each individual contribution to the collective forecast (expert calibration process).

More specifically, the hypotheses tested in this work are:

- i. Expert identification and calibration method:** in large groups, not all individuals are expected to possess equal levels of expertise. A weighted average of individual forecasts (hereafter referred to as prospects), whose weights are proportional to the current level of expertise (as hereinabove defined) of each individual, is expected to produce more accurate forecasts than a simple average or median value thereof. This holds under different business climate conditions.
- ii. Learning process:** Familiarity with the forecasting task is expected to provide experts with what Helmer defines a "refined sensitivity of [...] relevance" (Helmer, 1958: 30-32), an empirical manifestation of expertise. Hence an inverse relationship is expected to exist between individuals' frequency of participation in a forecasting task and their capability to return accurate forecasts. This holds under different business climate conditions.
- iii. Benchmark with existing methods:** A new approach should outperform existing ones. Hence, the weighted average of prospects is expected to produce more accurate forecasts than a confidence index.
- iv. Confidence as leading indicator:** A confidence index is believed to best capture information, which is not entailed in statistical forecasting methods. Hence, the combination of a confidence index and quantitative forecasts should return more accurate values than each constituent forecast.

4. Main findings, caveats and limitations

The main question addressed by this research is whether a forecast aggregation method, that calibrates inputs according to individuals' expected levels of expertise, leads to more accurate forecasts than a simple average of inputs. As shown in Table 1, the compound forecast obtained with exponentially smoothed weights consistently outperforms benchmark forecasts, although results can be generalised only under specific conditions.

Results based on prospects submitted by 640 experts, who participated in the UNWTO survey (both consistently and occasionally) between 2005 and 2013 (24 waves), provide a statistically weak, but regular evidence that a weighted approach returns more accurate forecasts than the two alternatives. Compared to the best performing alternative, accuracy gains achieved with the

weighted approach are in the range of 7% (-0.14 percentage points). The analysis, broken down by business climate and sub-groups of experts, helps understanding under which circumstances results can be deemed significant in a statistical sense.

Overall the weighted approach performs particularly well in regular times, when fluctuations around the trend are comparatively small. In a “business-as-usual” scenario, the compound forecast based on smoothed weights returns an error value that is on average ± 1 percentage points distant from the actual value, which can be considered as a satisfactory level of accuracy (see Table 1).

	Forecast evaluation by aggregation method						Accuracy gains	
	Weighted average	Simple average			Median value			
		MAE (1)	MAE (2)	DM	MAE (3)	DM	(2)/(1)	(3)/(1)
a. Panel								
Overall ¹	1,91	2,05	-0,299 (0,62)		2,05	0,114 (0,46)	7%	7%
b-a-u ¹	1,09	1,29	0,474 (0,32)		1,24	0,022 (0,49)	18%	14%
Crisis ⁴	4,77*	5,42	2,296 (0,04)		5,62	2,819 (0,02)	14%	18%
b. Loyal								
Overall ²	1,85*	2,05	1,352 (0,09)		2,11	1,698 (0,05)	11%	14%
b-a-u ²	0,93**	1,16	1,907 (0,04)		1,14	1,916 (0,03)	25%	23%
Crisis ⁵	5,57**	5,96	2,353 (0,04)		6,37	2,042 (0,06)	7%	14%
c. Occasional								
Overall ³	2,40	2,32	-0,290 (0,62)		2,14	0,114 (0,46)	-3%	-11%
b-a-u ³	1,82	1,57	0,471 (0,32)		1,42	0,023 (0,49)	-14%	-22%
Crisis ⁴	4,07*	5,60	2,102 (0,05)		5,29	1,604 (0,09)	38%	30%

Periods: overall: 2005/1-2013/3; b-a-u: 2005/1-2008/1 & 2010/1-2013/3; crisis: 2008/2-2009/3.

Accuracy gains are calculated as percentage share on the best performing among the three approaches.

The DM statistics is used to test the alternative hypothesis that weighted forecasts are more accurate than the other forecast (p value between breakets).

Alpha values: 1: alpha = 0.003; 2: alpha = 1.0; 3: alpha = 0.02; 4: alpha = 0.0; 5: alpha = 0.1.

*: p<0.1; **: p<0.05 (Diebold-Mariano test on alternative aggregation approaches).

Table 8 – Mean absolute error of compound forecasts by participation, alternative approaches and scenarios.

The analysis for regional series points to the same direction, as the weighted approach returns significantly more accurate forecasts for the series Asia and the Pacific, a region that mostly enjoyed a steady and regular growth during the observed period (see Table 2). The region also shows the lowest variance in the average absolute error of individual experts, which possibly contributes to the result. The fact that benchmark forecasts are significantly more accurate than the weighted approach for Africa, a series marked by high volatility, provides additional evidence to support this intuition.

	Forecast evaluation by aggregation method						Accuracy gains	
	Weighted average		Simple average		Median value		(2)/(1)	(3)/(1)
	MAE (1)	MAE (2)	DM	MAE (3)	DM			
Africa ²	3,52	3,18	-1,773 (0,96)	3,09	-1,983 (0,97)		-10%	-12%
Americas ³	2,54	2,60	0,066 (0,47)	2,76	1,128 (0,14)		2%	9%
Asia Pacific ²	3,48*	4,58	1,800 (0,04)	4,43	2,112 (0,02)		32%	27%
Europe ²	2,36	2,28	-0,003 (0,50)	2,24	0,090 (0,46)		-3%	-5%
Middle East ²	7,41	7,52	0,832 (0,21)	7,69	0,634 (0,27)		1%	4%

Accuracy gains are calculated as percentage share on the best performing among the three approaches.

The DM statistics is used to test the alternative hypothesis that weighted forecasts are more accurate than the other forecast (p value between breakets).

Alpha values: 1: alpha = 0.003; 2: alpha = 1.0; 3: alpha = 0.

*: p<0.1; **: p<0.05 (Diebold-Mariano test on alternative aggregation approaches).

Table 9 – Mean absolute error of compound forecasts by region, alternative approaches and scenarios.

A test performed on two subgroups of experts, characterised by a high and low level of participation in the survey, further corroborates these results (Table 1). In this piece of analysis, the mean absolute error of prospects provided by loyal experts in a “business-as-usual” scenario is below the ± 1 percentage point threshold, when aggregated using exponentially smoothed weights. For this group of experts, the predictive power of the weighted approach is significantly higher than that of benchmark forecasts, as indicated by the Diebold-Mariano test.

Another area of investigation covers familiarity with the forecasting task, and its likely impact on expertise, here defined as individual’s capability to produce accurate forecasts regularly over time. A correlation analysis confirms the presence of a linear, negative and significant relationship between individual’s frequency of participation and average absolute error ($p(639) = -.145$, $p < 0.00$). The analysis of the mean absolute error of forecasts provided by the two sub-groups eventually corroborates results: collective forecasts provided by loyal experts consistently outperform those provided by occasional experts, the only exception being the period impacted by the 2008/2009 economic and financial crisis.

A collective intelligence approach combined with a weighting algorithm seems therefore to be an adequate approach to minimize the risk of incurring in inaccurate forecasts. Panels consisting of large numbers of individuals are likely to consist of collectively a broader range of skills than small groups, which can be appropriate under different circumstance. Combined with an approach that qualifies individuals as experts ex-post, as the one herewith presented, each panel member’s contribution is automatically calibrated according to their effective performance and the operating climate.

The possibility to calibrate panel members’ contribution according to the current circumstances is indeed a major advantage of the proposed algorithm. Based on the definitions adopted by this piece of research, and evidence drawn from the dataset in use, expertise can be conceived as a dynamic concept that changes according to the operating environment. By introducing a dynamic weight system in the forecast aggregation process, the algorithm seems to efficiently embed this aspect in the collective forecast. Another major benefit is linked to the use of existing information to qualify individuals as experts, and then calibrate their contribution to the collective forecast.

This method can replace traditional *a priori* expert identification methods, which would offset the additional cost of implementing the routine task in a forecasting support system.

Another question addresses the superiority of the proposed method, in terms of forecast accuracy, compared to existing ones. The accuracy of compound forecasts, obtained from weighted prospects hereinafter referred to as homologised prospects- has been compared to the accuracy of the TCI by the means of the Diebold-Mariano test, for consistency with the analysis presented before. A normal distribution of prospects justifies the use of parametric procedures to qualitative forecasts. The TCI typically returns more accurate forecasts than homologised prospects (Table 3). This additional benchmark exercise also shows, once again, that smoothed weights perform better with regular series, as weighted prospects are significantly more accurate than the TCI for half of the series in exam during a “business-as-usual” scenario.

	Mean Absolute Error					
	Overall		Crisis		BAU	
	TCI	Prospects	TCI	Prospects	TCI	Prospects
World	1.54	2.67	1.20	5.54	1.68	1.48
Africa	3.47	3.96	3.91	4.94	2.33	1.42**
Americas	1.66*	2.89	1.71**	4.49	1.62	1.29
Asia Pacific	3.16	3.39	3.96	6.21	2.52	1.11*
Europe	2.29	3.01	2.11*	4.06	2.52	1.70*
Middle East	8.07	7.64	-	-	-	-

¹ Alpha values vary by series.

* Significant at p<0.1; ** Significant at p<0.05; *** Significant at p<0.01.

Table 10 – Mean absolute error, homologised TCI and homologised prospects, different scenarios.

With encouraging results about the overall performance of the weighted aggregation approach, the interest shifts to the main assumptions underlying this approach.

Data confirm past errors as a suitable proxy of individuals’ expected performance. The relationship between individuals’ average weight and mean absolute forecast error is not linear, but significant in a statistical sense (rh[639]: 0.129, p<0.01). With reference to the distribution of weights, it is interesting to note that the vast majority of the 640 experts is assigned a negligible weight in the compound forecast (median value = 0.001), and only a few experts (27) are typically assigned a weight greater than 1%. These experts contribute to more than 90% of the compound forecast value on average. The negative and significant correlation between weights and individual mean absolute error for these 27 experts ($p(26)=-.457$, $p>0.01$) confirms that the proposed method correctly qualifies as experts individuals who typically provide accurate forecasts.

5. Caveats and limitations

Confidentiality of information about panel members is just one of the caveats that apply to this research. Another relevant aspect concerns the conceptual discrepancy between the prospects collected through UNWTO survey and actual series. While international tourist arrivals measure inbound travel flows, UNWTO prospects capture changes in the overall tourism sector, including domestic demand. The related index returns a measurement of the overall business climate rather than just its demand component, which may partly explain the lack of significant results for some of the series.

On a practical level, the use of different scales introduces further limitations to the extent of the analysis. Prospects and actual values are available in different data format, and need to be homologised into comparable series. Linear regression is a widely used approach to rescale variables with ratio or interval levels, but it raises the doubt that part of the suboptimal performance of the proposed algorithm may be attributed to scale differences.

Moving to limitations, strict data requirements certainly restrict the domain of application of this approach. Exponentially smoothed weights can only be applied to phenomena that can be observed and quantified, in order to produce error series. This may not be a restrictive limitation in fields such as finance and economics, where judgmental forecasts and confidence indexes are commonly collected to compensate for delayed statistics, but may be an impediment in other domains, such as sociology or medicine. Although the method can deal with the entry and exit of individuals, this approach is undoubtedly tailored for longitudinal studies, as the information needed can only be collected through repeated forecasting tasks.

Furthermore, the learning algorithm requires a minimum of two past observations with a variance greater than 1 to return appreciable results. Combined with the need of homologating judgmental forecasts to actual values, a minimum of four past observations are needed to start producing appreciable results.

6. Application context and user value

Having worked closely with experts from UNWTO, the aim of this dissertation is to contribute to identify a model for hybrid forecasting which could be adopted by the UNWTO Secretariat, to the benefit of the tourism sector at large.

Consumer and business confidence surveys are other suitable areas of application of the weighted aggregation process object of this study. As mentioned earlier, the methodology adopted by UNWTO retraces the one typically used to track consumer confidence and business climate. Future tests about the use of exponentially smoothed weights as proxy for expertise could be performed on panel data from virtually every sector of the economy.

In this user case, potential drawbacks could be the extra cost of assessing expertise at each round, and the accurateness of weights assigned to panel members, who don't contribute regularly to forecasting tasks. The advantage of using existing information to qualify individuals as experts, and then calibrate their contribution to the collective forecast, offsets these costs. Based on individual forecasts error series, a by-product of data collected through the panel survey, the proposed method replaces traditional a priori expert identification methods with an ex-post

assessment of their level of expertise. Panel members can be recruited by the means of convenience sampling, removing costs related to experts' screening. Given the repetitive nature of the task, cumulated benefits realistically offset the additional cost of implementing this procedure. If embedded in a forecast support system, the costs associate with the estimate of weights would become negligible, as computer programmes compute the necessary steps to estimate weights and deal efficiently with the entry and exit of panel members.

The intended application of the proposed approach goes beyond backward looking methodologies. Forecast support systems provide an ideal setting for this algorithm. Computer programs can enhance the sophistication of the proposed technique, for instance introducing alternative smoothing models to best fit the error series of each panel member, or automating parameter optimization. Furthermore, forecast support systems can provide panel members with additional input and guidance to improve their learning curve. Information technology offers unparalleled opportunities to enhance expert forecasting methods and exploit their potential to the full extent.

Considerations on user value necessarily address the tourism sector, which was elected as an ideal case example for the purposes of this research. The main challenges faced by tourism analysts and forecasters stem from problems related to data availability, such as the incidence of missing information, the lack of consistent data series, the need of a rather complex set of indicators explaining tourists' behaviour (Frechtling, 2001). Volatility of demand, and the sensitivity of demand to external events such as war, terrorism and catastrophes, further complicate the matter and limit the performance of quantitative methods common in other sectors of the economy. Due to the lack of adequate information to model and forecast tourism demand, the proposed approach certainly proves a convenient alternative to fill this gap.

Backwardness in tourism forecasting research is only partly attributed to the complexity and scarce data availability. There is also a tendency to have an easy-minded approach, which associates tourism with human-touch, before associating it with technical skills. Things seem to be changing, thanks to the mushrooming of higher education programmes specific for the tourism sector, and a rejuvenated interest in analytics brought by the dominant role of e-marketing and the growing weight of OTAs in the sector. Research conducted in a real-life setting is crucial to still too large gap between academics and practitioners in this sector. Still, the simplicity of the proposed approach certainly makes this method easy to interpret and more likely to be adopted by practitioners in this sector.

Given the limited number of tourism publications concerning qualitative forecasting approaches, this piece of research can also be valued for its contribution in this area. The work presented in this dissertation provides a number of stimuli to further strengthen research in this domain. A first stream of research concerns behavioural aspects. With the support of an online system a number of individual characteristics can be unobtrusively tracked, and used to shed light on the measurable characteristics of the construct expertise. System usage can also be tracked, offering valuable information on guidance features that best support forecasters with their tasks. Another area of research concerns missing data and incomplete time series, a typical tourism problem. Research in this area could investigate how judgment can contribute to complete series with missing data and to what extent proximity in data patterns can be used to interpolate data.

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THIRD AWARD

**Customer Perceptions of Guarantee Policies and Employee Behaviour in Service Recovery:
An Investigation of Justice, Signaling and Attributions**

Crisafulli Benedetta
Kingston University

DISTINGUISHED PAPERS

Exploring the Relationships between Financial Indicators and the Opening of Insolvency Proceedings

Juricic Denis
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Abstract

The overarching purpose of the doctoral thesis was to determine whether it is possible to anticipate the insolvency of a company by using financial indicators. The main objective was to analyze individual financial indicators and define those that predict the insolvency of a company. For predicting the failure of companies an original and complex methodology with a variety of nonparametric bivariate methods in combination with multivariate binary logistic regression was developed. The developed models should enable management of companies to promptly react and to take appropriate measures for financial and operational restructuring to avoid the insolvency of a company.

INTRODUCTION

The failure of a company has been variously defined in the literature. In the vast majority of cases, the resulting models for predicting failure have been based on the arbitrary definition of financial distress of companies (Doumpos & Zopounidis, 1999; Hill, Perry, & Andes, 1996; Platt & Platt, 1990), for which different criteria (e.g., a multiannual negative profit from sales, non-payment of dividends, layoffs, restructuring, high indebtedness, negative operating profit, sale of own shares, conversion of debt to equity, accumulated losses, sustained illiquidity, sell-offs of important parts of the company, informal state aid, rescheduling of bank loans) have been used. In theory and in practice there is no common view on the differentiation between concepts of liquidity and solvency of a business. Platt (1998, p. 21), for example, denoted four conflicting definitions of insolvency for the economic, capital, bankruptcy and technical insolvency. Insolvency is defined by the law as the situation that arises when the debtor is permanently illiquid or becomes insolvent in the long term. Such illiquidity and over-indebtedness are a result of the failure of the company or a crisis in the company.

Different definitions of a crisis in the company have been used in the literature; definitions depend on the approach of the author toward addressing a crisis in the company. There is no single, generally accepted definition that would spell out what a crisis means, although it has generally been considered that a crisis represents an event that can affect the entire company and may lead to failure (Mitroff, Pearson, & Harrington, 1996). In the dissertation, a crisis is defined as an unplanned, unwanted and unfavorable situation in the company which is caused by different possible unfavorable causes. Insolvency is merely a consequence of a crisis; hence, in analyzing the causes of actual insolvency, it is at the same time important to analyze the causes of a crisis. The latter could not be equated with certain warning signs in various business areas of the

company. If a company in a crisis recognizes these signs and responds to them properly in a timely manner, it is possible to eliminate the causes of a crisis and prevent resultant ill effects.

The identification and analysis of causes of a crisis and financial position represents the first stage in the process of resolving a crisis and therefore the theoretical part of the dissertation first presents the findings of various authors regarding the definition of a crisis in the company, analyses of causes of crises and possible signs of crisis.

In addition, in the theoretical part of the dissertation, *a historical overview of the development of various models, which were developed by various authors in the past for predicting the failure of companies, has been comprehensively and chronologically presented.*

The development of forecasting models represents the controlled classification, which has been derived from the classic paradigm, which states that a given set of companies with well-known attributes and known success lays down the rule that allows other businesses to define their success based on their descriptive features (Hand, 2004). This paradigm could obviously not take into account some important aspects of the real problems in relation to the prediction of the failure of companies. Keasey and Watson (1991) explicitly state that the concept of financial distress constitutes a measure of an arbitrary nature. A second arbitrary factor is the way in which the definition of the failure of companies is used with the aim to differentiate successful companies from unsuccessful companies. In defining the failure of a company authors have applied arbitrarily selected years or time periods. Classifying companies into successful and unsuccessful can be considered an artificial division, since the two groups are mutually exclusive only in the selected time period - as a result the findings cannot be generalized (Altman & Eisenbeis, 1978; Ooghe, Joos, & De Bourdeaudhuij, 1995). Often companies identified as unsuccessful were those that, for whatever reason, ceased to operate within a specified period of time (i.e., Pušnik & Tajnikar, 2008).

The dissertation *raises the issue that the vast majority of the research carried out in the world has used an arbitrary classification of the population of companies into unsuccessful and successful*, even though in fact there is no dichotomy between the two groups of these companies. Statistical modeling methods, which apparently have been based on the assumption of the dichotomy, in such cases have not been properly used for predicting the failure of companies. An arbitrary definition of failed companies may have serious effects on the resulting model. The dissertation clarifies that the criteria of defining '*failure of the company*' always represents an arbitrary decision when one is not using the legal definition of failure. Therefore, in the dissertation, the data from the year of judicial insolvency proceedings was used as a criterion for assigning a failed company.

The dissertation focused on an important field of study, because *research has not yet been carried out that would represent a systematic assessment of performance from the viewpoint of creditors - which would use such criterion over time - and would then through a variety of financial indicators using a varying set of relevant statistical methods, monitor business operations of companies studied by individual years over a period of several years prior to the opening of insolvency proceedings.*

The insolvency of a company represents an indispensable condition for the commencement of judicial insolvency proceedings. Prior to the start of the insolvency proceedings, management

has, in accordance with the law, a duty to act immediately: to analyze the causes for insolvency as a result of particular unsuccessful business operations, describe the financial situation and prepare measures of financial restructuring.

The financial analysis as part of the business analysis is one of the most important analyses in the company and can be helpful in detecting reasons for the crisis within the company. The most commonly used method of financial analysis is that using financial indicators. Therefore, the theoretical section of the dissertation follows *the presentation in detail of 111 financial indicators* classified into 8 groups, which were in the empirical section of the dissertation included in the statistical study of the prediction of the insolvency procedure.

RESEARCH DESIGN, METHODS AND RESULTS

The main objective of the dissertation was to *analyze individual financial indicators* and to *define those that predict insolvency of a company*. Financial ratios were calculated for all those companies that have submitted annual reports in Slovenia for each year during the 2005-2010 period. Of the thus obtained 321,419 full corporate records of companies 111 different financial indicators were computed and analyzed in the study, which in these companies represents the enormous amount of 35,677,509 calculated indicators.

The dissertation in the very extensive empirical part includes the examination of unsuccessful companies (1,187, over which was initiated judicial insolvency proceedings in the 2009-2011 period) in comparison with (by business activity and operating revenues) successful companies (3,555 in all were surveyed as such) on the basis of changes in financial indicators for the period of four years before the opening of insolvency proceedings for an individual unsuccessfully company.

The study indisputably confirmed the fundamental hypothesis that *certain financial indicators exist with which it is possible to predict insolvency of a company*, and the hypothesis that *the various financial indicators are variously suitable for predicting insolvency of particular groups of companies according to the business activity*.

For this kind of prediction most researchers use one of the standard statistical methods. In the dissertation the indicators and their trends were analyzed by using several different methods in order to derive financial indicators that best predict insolvency of the company or explain the differences between successful and unsuccessful companies.

To this end, because of the complexity of the topic studied in the thesis, an original and complex methodology was developed for predicting the success or failure of companies. The methodology with a variety of nonparametric bivariate methods (*Wilcoxon matched-pairs signed-ranks test*, *Friedman Two-Way Analysis of Variance by Ranks*, *Pairwise comparisons following computation of the test statistic with the Dunn - Bonferroni test*) was used in combination with multivariate binary logistic regression.

The dissertation examined in a great depth all the available statistical methods and compared them with each other, because each method gave slightly different results, and each has its own advantages and disadvantages.

The **FIRST PART** of the methodology relates to the recognition of differences between successful and unsuccessful companies separately for each of the respective fields of business

activity. The dissertation provides an overview of the theory of normality of the distribution of variables, which is the basis for deciding which statistical methods are used in the study. In the literature, many studies have examined the usefulness of the analysis of financial indicators, which are very often used as independent variables for the study of the various problems of a company. The dissertation points out that although these studies represent an important contribution to issues relating to the prediction of bankruptcies and to other financial analyses, they often *don't verify the fulfillment of assumptions of normal distribution and consequently the validity of the use of parametric tests*. If the assumption of normal distribution is not true, it is not possible to draw reliable conclusions about the parametric test used.

In the dissertation, therefore, is verified (separately: 1. for the differences between the value of each indicator for an unsuccessful company and the average value of the same indicator of three comparable successful companies, 2. for indicators of successful companies, 3. for indicators of unsuccessful companies) the normality of the distribution of the variables and the results of *tests of skewness* by the method of Shapiro and Wilk (1965), *tests of kurtosis* (D'Agostino, 1970, p. 680) and the *D'Agostino-Pearson test of normality* (D'Agostino & Pearson, 1973, p. 620) are presented. Due to a failure to meet assumptions of the normal distribution of financial indicators in this part of the methodology various nonparametric bivariate tests were used.

The results of the *Wilcoxon matched-pairs signed-ranks test* have shown that between successful and unsuccessful companies in almost all financial indicators there are statistically significant differences in average ranks of indicators, even four years before the opening of insolvency proceedings. The *Friedman test* further showed that medians of differences of some indicators between two groups of companies changed throughout the years of the study period. *Pairwise comparisons with the Dunn-Bonferroni test* indicated that most statistical differences occur during a period of two years to one year before the opening of insolvency proceedings. Statistically significant differences between the groups of successful and unsuccessful companies have also emerged in more than half of the three-year and four-year trends; regardless of the activity, as well as the length of the trend, in both cases the results were very similar.

However, the greatest differences between the two groups of companies were reflected in the following indicators or their trends: *debt ratio, rate of long-term financing of non-current assets and inventories, return on sales, days of short-term payables, equity and fixed assets ratio, capital in long-term assets ratio, and long-term coverage of fixed assets and inventories*.

The **SECOND PART** of the methodology used the approach of identifying the relevant indicators for predicting the failure of companies. The initial selection of the most appropriate indicators for the logistic regression models was done by using the *principal components analysis*.

In the area of business studies and management the dissertation introduced a methodological innovation by using the method of *conditional logistic regression with matched sets*, which the dissertation proved leads to more accurate results than the conventionally used *unconditional logistic regression* for forecasting the performance of a company, which is reflected in a greater proportion of correctly classified companies using CLR than ULR.

The conditional logistic regression with matched sets (**CLR**) is an important extension of the 'standard' logistic regression – unconditional logistic regression (**ULR**), which provides

important conceptual advantages and enables data analysis on stratified samples and case studies with a control group (Armitage & Colton, 2005). Langholz and Goldstein (2001) demonstrated that CLR tends to be more efficient than ULR, but with its use costs are increased due to time spent for more advanced analysis (Thompson, Kelsey, & Walter, 1982).

CLR is used when a group of cases or individual cases are compared with the appropriate groups of controls or controls with similar characteristics in case-control studies. In medical science, this method has become a standard analytic technique (Greenland, Schwartzbaum, & Finkle, 2009). The field of statistics has not yet specified precise rules determining when to use CLR rather than ULR.

In the review of the available literature, I found that most researchers (mainly in medical science) in the evaluation of these two methods based their results on case-control studies on stratified samples, but I have not spotted any comparison of these two methods in studies of cases and controls with matched pairs or sets.

The case-control study with matched pairs or sets, which was used in the dissertation, requires a special preparation of the sample, which is divided into strata, in each of which is included one unsuccessful company and one or more control companies (Hosmer, Lemeshow, & Sturdivant, 2013, p. 243).

The overall probability of an event within each stratum is always 1, but we are interested to know what the probability is of a studied unit to be the *case* or the *control*. If we have more controls and more covariates, the conditional probability (p_0) that the unit becomes a case is calculated, where we assume that only one unit can be the case. This is done as follows for j -th stratum:

$$p_0 = \frac{e^{\beta_1 X_{j01} + \beta_2 X_{j02} + \dots + \beta_k X_{j0k}}}{e^{\beta_1 X_{j01} + \beta_2 X_{j02} + \dots + \beta_k X_{j0k}} + \sum_{i=1}^m e^{\beta_1 X_{ji1} + \beta_2 X_{ji2} + \dots + \beta_k X_{jik}}},$$

which represents: X_{j0} – the covariate for the case, X_{j1} – the covariate for the first control, X_{j2} – the covariate for the second control, X_{jk} – the covariate for the k -th control, k – the number of covariates in the model, m – the number of controls, i – the identification of 1 to m controls, $\beta_1 \dots \beta_k$ - beta coefficients for each of 1 to k covariates in the regression model.

In the study, each individual unsuccessful company (the *case company*; all together 1,187 companies) was paired in most cases with three successful *control companies* (all together 3,555 companies), each one comparable to the case company considering operating revenue and business activity.

The dissertation presented a total of 20 different logistic regression models for predicting the failure of the company, separately for each of four treated groups of business activity (*manufacturing, construction, trade, services*) for every year in the last four years before the opening of insolvency proceedings for an unsuccessful company and also for the dynamics (trends) over this period (the trends in the study even turned out to be an important factor in differentiating the so-called marginal groups of companies). CLR was used for the identification of relevant indicators for predicting the insolvency of companies, but predictive models were made on the basis of β coefficients, which were derived by using ULR. It turned out that if ULR

would be used also for identification of relevant indicators, a smaller proportion of correctly classified companies (especially unsuccessful) would be obtained.

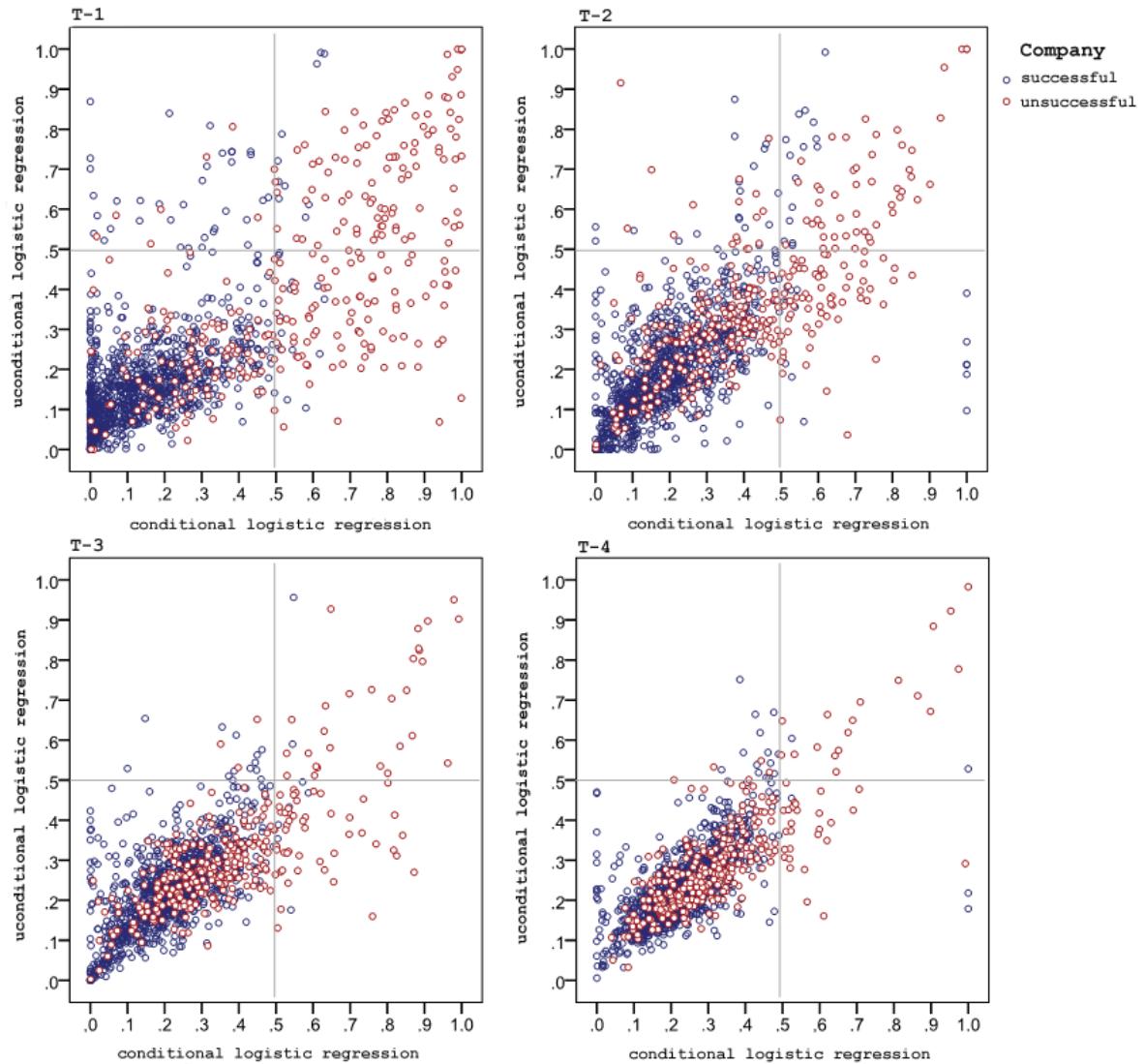
In each model, initially one of the indicators of each component was placed in and other indicators that could not fit into any of the components were added. In this way the lowest possible correlation of indicators was ensured and thereby avoided the problem of multicollinearity. In selecting indicators from each of the components, the priority was given to those indicators which had the greatest possible weight, so it would be in the greatest possible correlation with the corresponding component. In order to obtain the best possible model, indicators were gradually excluded on the basis of their '*p*' value; in this procedure indicators with high '*p*' value (those that do not contribute to the explanatory power of the model) were eliminated first.

In both types of regressions a hierarchical model with the method '*enter*' was used. In the first model those indicators shown to have statistically significant influence were included. In the second model were included control variables and in the third model the interactions between control variables and indicators. In order to determine a statistically significant effect, the significance level of 0.05 was used.

The adequacy of the obtained models was evaluated according to different criteria, but above all the focus was on the classification table from which a proportion of correctly classified companies was obtained. The reliability of the models was evaluated on the basis of scattergram graphs and ROC (Receiver Operating Characteristic) curves.

Graphs in Figure 1 show the likelihood for individual companies to be introduced in insolvency proceedings that were derived by using unconditional and conditional logistic regression for service companies. Similar results were obtained in the other three groups of business activities covered in the study (manufacturing, construction, trade).

Figure 1: A comparison of results of the unconditional logistic regression and the conditional logistic regression with matched sets by years of the study period (companies in service business activities)*



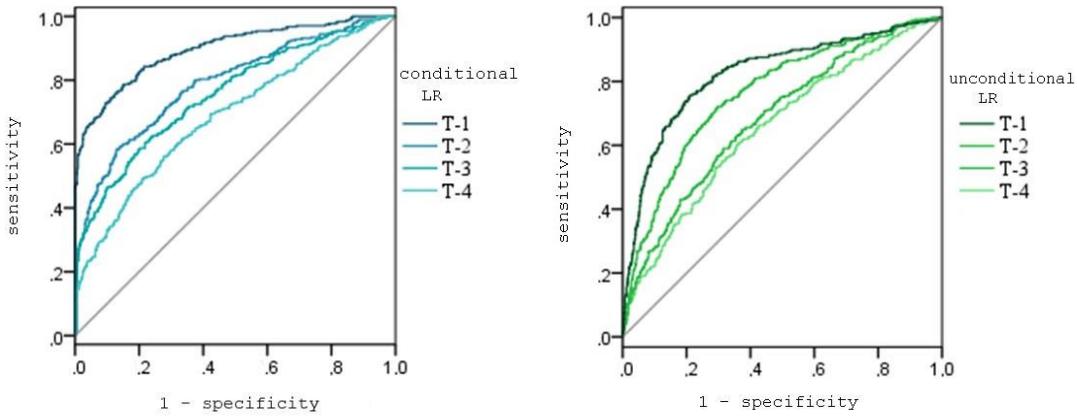
For the period of one year before the opening of insolvency proceedings the vast majority of successful companies is located in the lower left quadrant, which means a low level of probability of failure of the company with respect to both logistic regressions. In the upper right quadrant very few successful companies can be found; predominantly companies that can be, by using both methods, determined as unsuccessful companies. A larger number of companies can also be found in the upper left quadrant - these companies have been correctly classified by the CLR, but not by the ULR. In the lower right quadrant are almost only unsuccessful companies, correctly classified by the CLR, but not by the ULR.

For the period of one year before the opening of insolvency proceedings we can conclude that CLR classified companies considerably more accurately than ULR. On the basis of data for two years before the opening of insolvency proceedings, the number of correctly classified unsuccessful companies was drastically reduced in comparison to the one year period; this

occurred when both methods were used; but again there were a quite high number of correctly classified unsuccessful companies identified by CLR, but not ULR. For three and four years before the opening of insolvency proceedings the regression models correctly classified very few unsuccessful companies, whereas most successful companies were correctly classified by both methods.

Figure 2 shows the ROC curves for both types of regressions for all four years of the study period. Specificity means the proportion of incorrectly predicted successful companies out of all successful companies, whereas sensitivity refers to the proportion of correctly predicted unsuccessful companies out of all unsuccessful companies. The bigger the area under the cumulative distribution function in relation to these two criteria, the better the fit of the model. The quality of the model was measured by the size of the area between the curve and the reference line, which was then assessed on the basis of the method of Kleinbaum and Klein (2010, p. 357).

Figure 2: The ROC curves for unconditional logistic regression and conditional logistic regression with matched sets for all four years of the study period (companies in service business activities)*



The ROC curves for the classifications made by CLR are slightly steeper, which suggests a better classification, which deteriorates, as expected, with the time distance from the opening of insolvency proceedings over the years.

The comparison of the two methods in Table 1 shows that for all the studied periods CLR yielded better classifications of companies compared to the classification of ULR in all four groups of business activities.

Table 1: The area below ROC curve for all activities

Year*	Manufacturing		Construction		Trade		Services	
	CLR	ULR	CLR	ULR	CLR	ULR	CLR	ULR
T-1	.943	.914	.891	.871	.971	.934	.896	.825
T-2	.856	.810	.807	.733	.866	.812	.788	.764
T-3	.772	.724	.787	.732	.806	.760	.756	.685
T-4	.714	.690	.701	.681	.706	.699	.687	.654
Trend	.769	.712	.777	.775	.743	.741	.768	.732

The ROC curves, by which the quality of the regression models was measured for determining their likelihood of insolvency, indicated a good classification of companies. The accuracy of the prediction of insolvency of companies varies considerably by business activity. The accuracy of the prediction deteriorates, as expected, with the time distance from the opening of insolvency proceedings over the years and are for the period for three or four years before the opening of insolvency proceedings very risky for all activities which can be seen in Figure 3.

Figure 3: The proportion of correctly classified unsuccessful companies – the conditional logistic regression with matched sets *



For the period of two years before the opening of insolvency proceedings, a prediction can be made with about a 50 percent probability of failure of the company with activities in manufacturing or trade. For one year before the opening of insolvency proceedings, the probability of correct predictions of unsuccessful manufacturing and trade companies rises to over 80%, whereas for companies in construction and services the figure is about 60%. Trends of indicators were shown to be important in construction business activities; therefore it would make sense to include both indicators and their trends in predictive models in order to obtain a more accurate classification.

The dissertation shows that some of the indicators reveal a problematic situation in the company already in the earlier periods (three or four years prior to the insolvency), but the forecasting of insolvency may be quite risky. It was found that different indicators and their trends could have varying importance depending on the time distance from the potential insolvency.

CLRs with matched sets exposed the most important indicators for each year of the study period as well as for the total study period of four years. The dissertation delineates those indicators individually whose influence was statistically significant within each business activity in at least two periods.

The indicators found to be important in most of the business activities, are: *efficiency ratio*, *proportion of tangible fixed assets in assets*, *inventory turnover*, and *current liquidity*.

As a supplement to the predictive models obtained with logistic regression, a *comparative analysis of the remediated companies and companies in which remediation failed was also performed*. In the **THIRD PART** of the methodology, the dissertation thus further examines companies that had various forecasts for failure or success through a four-year study period, attempting answer the question of whether this is attributable to changes in the company's operations or the fact that predictive models did not include all relevant indicators. With this aim, two groups of companies with perceived problems in earlier periods were analyzed: one group managed to recover from the crisis, the other did not. The differences between the two groups of successful and unsuccessful companies for each of the four groups of areas of business activity were compared with the nonparametric *Mann-Whitney test* for all financial indicators and their trends and the differences during the last two years of the studied period. This analysis in an original way of further examining the importance of some indicators for finding out the potential insolvency of companies obtained on the basis of logistic regression models, while at the same time identifying some new indicators that could not be identified through the model-based approach.

Several indicators indicated differences between the two groups (nine in *manufacturing*, eight in *construction*, 18 in *trade* and 34 in *services*). Indicators and their trends that were found important for all four groups of business activities are: *long-term financing of non-current assets and inventories* and *proportion between equity and fixed assets*.

RELEVANCE TO BUSINESS

In addition to the scientific contribution in the area of business studies and management, presented in the previous section, the dissertation also presents a practical contribution for the overall business environment, since it examined questions that could enable management of companies to promptly react and take appropriate measures for financial and operational restructuring to avoid the insolvency of their company and to avoid bankruptcy or forced settlement, which usually follows on insolvency.

For a successful company, its stability and prospectus interests a great number of entities because companies represent generators of creation or loss of domestic product. The performance of companies is monitored by, in addition to various state institutions, banks, pension and investment funds and other investors, insurers, business partners and ultimately owners and management.

Findings in the dissertation provide insight into the individual financial indicators, which should be particularly under the attention of management of companies to ensure the financial stability of the business.

Significant to the field of accounting, in addition to financial studies, the dissertation treats a large number of indicators, deriving more accurate results through the flexibility afforded by finding a means to treat with greater complexity yet ultimately more directly the factors involved in insolvency. The author's corrected indicators added to his own amount to a total of 72. This was possible in part through identifying the use of creative accounting found by delving into the specifics of insolvency proceedings of companies. Of these indicators, the most valuable may

prove to be in trade and service activities, where they are most often detected.

The dissertation highlighted the most important indicators for predicting the failure of a company for each of the discussed statistical methods. However, the difference between successful and unsuccessful companies as determined by using all relevant methods are best indicated by the following: *equity to fixed assets ratio*, *efficiency ratio*, *proportion of tangible fixed assets in assets*, and *proportion of operating expenses (excluding depreciation) in short-term operating liabilities*. The importance of trend indicators was found to differ by the group of business activity, but the trend of *equity to fixed assets ratio* and *trend of the return on equity* were identified as the most important. In addition, some trends were found to be important for certain business activities (*trend of the profit /plus financial expenses/ in assets ratio* in manufacturing and construction; *trend of the proportion of cost of materials in operating revenues* in manufacturing and services).

A practical contribution of the dissertation is also reflected in the 20 equations (logistic regression models), which can be helpful for an individual company for calculating the probability of failure for each of the next four years and for determining the critical values of some important indicators that point to a crisis in the company.

Establishment of clear thresholds of indicators, by which it would be possible to determine whether the company within a specified period becomes insolvent or not, is a complex problem. Nevertheless, for several major indicators in business activity the dissertation presented values of the indicators of failed companies with at least a 99 percent probability of insolvency.

By presenting the detailed graphical analysis of the calculated values for each of the addressed indicators by business activities, the dissertation represents an important contribution to the area of research of financial indicators and, with the newly identified questions, also a basis for further detailed research in this area.

**T* denotes the time period before the opening of insolvency proceedings (*T-1*: one year before, *T-2*: two years before, *T-3*: three years before, *T-4*: four years before).

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The Role of HR Practices, Leadership and Co-Worker Support in Psychological Contract Fulfilment: An Examination of Direct and Interaction Effects

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Abstract

This paper proposes and tests two-way and three-way interactive associations among high performance work systems (HPWS), frontline management leadership behaviour and co-worker support while predicting psychological contract fulfilment. Using a unique dataset from a staff survey based on 1,051 frontline employees employed in 35 private-sector work units in India, the proposed model was tested using Partial Least Squares-Structural Equation Modeling (PLS-SEM) and hierarchical regression analyses. This study found that HPWS, frontline management leadership behaviour and co-worker support had significant positive relationships with psychological contract fulfilment. A significant positive interaction effect was observed for high performance work systems and co-worker support, and a negative interaction effect between frontline management leadership behaviour and co-worker support.

Keywords: high performance work systems, frontline management leadership behaviour, co-worker support, psychological contract fulfilment, three-way interaction

Introduction

Strategic HRM scholars are increasingly turning their focus to examine intermediate variables that could potentially help unlock the “black box” between HRM and performance (Becker & Huselid, 2006; Snape & Redman, 2010; Guest, 2011; Katou & Budhwar, 2012; Jiang, Takeuchi & Lepak, 2013; Boxall, 2014). Psychological contract has been identified as one such intermediate variable that could provide a compelling explanation of the causal mechanisms through which HRM practices influence performance outcomes (Guest & Conway, 2002; Uen, Chien & Yen, 2009; Bal, Kooij & De Jong, 2013).

Previous research has analysed HPWS or other antecedents in isolation or has treated them independently while predicting psychological contract fulfilment, which is too simplistic. It is worth noting that the empirical context of the psychological contract studies, although broad, has overlooked the role of human agents, supervisors and co-workers (Conway & Briner, 2009). An exploration of how these antecedents may interact amongst themselves is likely to yield a more complete, comprehensive understanding of how these multiple antecedents operate collectively to impact psychological contract fulfilment. Further, there is no study that has examined the interactive associations of HPWS, FLM leadership behaviour and co-worker support. Thus, it would be valuable to investigate whether the effects of these three antecedents are contingent upon one another in predicting psychological contract fulfilment.

Theoretical background and hypotheses

Interaction effect between high performance work systems and frontline management leadership behaviour in predicting psychological contract fulfilment

While HPWS has been recognised as a strong driver of psychological contract fulfilment, frontline managers also play active roles in shaping the perceptions of employees' psychological contract fulfilment (Guest & Conway, 2004; McDermott et al., 2013). A strong HRM system *in conjunction with* effective supervisor behaviours, is likely to further reinforce perceptions of psychological contract fulfilment compared with each being considered independently (see Bowen & Ostroff 2004; Purcell and Hutchinson, 2007).

More recently, McDermott et al. (2013) reasoned that "HR systems and line managers' leadership styles each have the potential to influence employee behaviours and attitudes, through their impact on ability, motivation, and opportunity for employees to perform." This view has been extended by several scholars who suggest that there is an interplay between HRM systems and front line leaders' behaviours on employees' perceptions of the psychological contract (Purcell & Hutchinson, 2007; Stanton, Young, Bartram & Leggat, 2010).

In the context of this paper, employees are likely to be influenced both by the HRM practices they experience and by their line managers' leadership behaviour. The interplay between these relationships may influence the perceptions of the psychological contract fulfilment. Furthermore, it is clear that just as good management has the capacity to overcome the failings of poor HRM system, poor frontline management could potentially offset a progressive HRM system.

Based on these theoretical arguments, we propose the following hypothesis:

Hypothesis 1: There is a two-way interaction between high performance work systems and frontline management leadership behaviour in predicting psychological contract fulfilment.

Interaction effect between high performance work systems and co-worker support in predicting psychological contract fulfilment

Kehoe and Wright (2013) argued that while employees develop their own exchange relationships with the organisation, this is not done in isolation. Rather, the relationships are built in the context of constant interactions with co-workers with whom they share their daily experiences. This argument is in accordance, with the ambit of social information processing theory (Salancik & Pfeffer, 1978). It is proposed that the ways in which employees develop their opinions regarding their obligation to and from the organisation is predicated upon the information they receive from their co-workers. There is also theoretical support for the idea that HPWS could influence an employee's ability to make sense of the work environment as well as of the relationships with peers (Bowen & Ostroff, 2004; Mossholder, Richardson & Settoon, 2011).

The role of co-workers can be considerably crucial in interpreting HPWS, especially evident in cases, where the employee has not had any personal experience with a particular HRM practice (Nishii, Lepak & Schneider, 2008; Frenkel, Restubog & Bednall, 2012; Kehoe & Wright, 2013). In such situations, as noted by Van Knippenberg et al. (2007), employees often have little choice but to "rely on others to make sense of issues for which no 'objective' reference point exists" (p. 55). Hence, employees depend on an informal peer reference group comprising of their co-workers. This reference group are likely to be most trusted and hence relied upon to interpret HRM practices. Thus, co-workers influence employees' perceptions of HPWS, which in turn, exerts a strong influence on their perceptions of the psychological contract fulfilment (Ho & Levesque, 2005; Mossholder et al., 2011).

Accordingly, we propose the following hypothesis:

Hypothesis 2: There is a two-way interaction between high performance work systems and co-worker support in predicting psychological contract fulfilment.

Interaction effect between frontline management leadership behaviour and co-worker support in predicting psychological contract fulfilment

This paper conceptualises that leadership behaviours of frontline managers interact with co-worker support to predict psychological contract fulfilment. On a conceptual level, this interaction is deemed to be logical since they are both an integral part of the work environment. Notwithstanding this, the nature of the interaction merits closer scrutiny, as employee relationships with frontline managers and co-workers could be positive or negative (Chiaburu & Harrison, 2008).

It is argued that there is a need to understand if the impact of co-workers is substituting or overlapping with the impact originating from other social entities such as frontline managers or leaders (Chiaburu & Harrison, 2008). Taking this argument further, it could be suggested that co-worker support could have the ability to diminish the efficacy of FLM leadership behaviour in the fulfilment of the psychological contract. It is therefore both relevant and important that the interaction of co-worker support and frontline leaders' behaviour be studied concurrently. We are not aware of any previous studies that have examined the interaction effects of frontline leaders' behaviour and co-worker support in predicting the psychological contract fulfilment. The current study tests the interplay between HPWS and co-worker support on psychological contract fulfilment.

For the aforementioned reasons, we make the following proposition:

Hypothesis 3: There is a two-way interaction between high performance work systems and co-worker support in predicting psychological contract fulfilment.

Interaction between high performance work systems, frontline management leadership behaviour and co-worker support in predicting psychological contract fulfilment

Employees develop distinct social exchange relationships specific to parties they encounter at work including employer, line manager and co-workers (Conway, Kiefer, Hartley & Briner, 2014). Specifically, Chiaburu and Harrison (2008) suggested that the influences originating from co-workers, leaders, and the organisation should be examined simultaneously as it would be beneficial in advancing theory. They further lamented what they perceived to be a lack of attention in the extant literature, and theory development regarding these inter-relationships. From the foregoing, it is logical to examine HPWS in conjunction with FLM leadership behaviour and co-worker support, rather than as distinct and separate aspects of the work environment. This is an important but as yet untested proposition, which leads to the following hypothesis:

Hypothesis 4: There will be a three-way interaction among high performance work systems, frontline management leadership behaviour and co-worker support in predicting psychological contract fulfilment.

Methodology

The sample comprised 1051 permanent full-time frontline employees from 35 work units from 33 private sector organisations in India. The organisations were representative of a wide variety of industry sectors, including financial services, outsourcing, computer software, telecommunications, printing, and automotive. The respondents were employed in key

organisational functions such as finance, marketing and sales. Since, the data were primarily based on HRM practices, employees working in the HR department were excluded from this study in an attempt to reduce bias. The diverse task contexts and organisational settings of this sample enhance the generalisability of the findings.

2000 questionnaires were administered. 1051 questionnaires were received, giving a response rate of 52.55 percent. Categorising age into groups, the largest age group consisted of 20-30 years, accounted for 81 percent of the respondents. The average employee age of this study is 26.07 years. 70.3 percent of the respondents were male. 71 percent of the respondents were graduates, which constituted the largest group in the study.

Measures

We used seven-point Likert-type scales ranging from 1 (strongly disagree) to 7 (strongly agree) for all substantive variables.

High performance work systems have been measured using a 16-item scale. These items have been compiled using prior literature studying HPWS (Huselid, 1995; Guest & Conway, 2004; Purcell, Kinnie, Swart, Rayton & Hutchinson, 2009; Kehoe & Wright, 2013). Sample items include “Employees have clear career paths within the organisation.” It is treated as a second-order formative construct consisting of three first-order formative constructs: Ability-enhancing, motivation-enhancing and opportunity-enhancing bundles based on the AMO framework.

Frontline management leadership behaviour are aimed at HR duties carried out by FLMs including selecting, appraising, developing, communicating and involving, which are often related to influencing employee attitudes and behaviours and giving direction. There are five items for this construct, which have been adapted from previous literature, mainly, Purcell and Hutchinson (2007) and Purcell et al. (2009). An example item is “The supervisor is good at...providing coaching and guidance to help improve my performance.”

Co-worker support is defined as ‘an employee’s global beliefs concerning the extent to which the co-workers’ value their contributions, cares about their well-being and have positive attitudes towards them’. The nine-item survey of perceived co-worker support was developed to be parallel to the Survey of Perceived Organisational Support (SPOS), with the target being co-workers rather than the organisation. The items for the present study are adapted from Ladd and Henry (2000), which include “My co-workers... are supportive of my goals and values.”

Psychological contract fulfilment (facet) was measured using a thirteen-item scale adopted from Guest and Conway (2002). The measure assessed the extent to which the respondent felt the organisation had kept its promises (7 items), treated them fairly (2 items) and how much they trust the organisation (4 items). Sample items include “Has the organisation fulfilled its promise or commitment to.... provide you with a reasonably secure job”, “Overall, do you feel you are fairly rewarded for the amount of effort you put into your job.” and “To what extent do you trust your immediate manager to look after your best interests.”

Control variables Questions relating to the demographic variables of gender (0 = male, 1 = female), age (1 = under 30, 2 = 30 to 39, 3 = 40 to 49, 4 = 50+), organisational tenure in years/months, educational level (1 = high- school diploma, 2= university degree, 3 = post-graduate/professional qualification, 4= others) and sector (0= service, 1= manufacturing) were included in the questionnaire.

Results

This section tests the pairwise interactions between the three independent variables used in the study: HPWS, FLM leadership behaviour and co-worker support in the prediction of

psychological contract fulfilment. From the theoretical model, it can be posited that the two-way interactions (high performance work systems X frontline management leadership behaviour; high performance work systems X co-worker support; frontline management leadership behaviour X co-worker support) and the three-way interaction (high performance work systems X frontline management leadership behaviour X co-worker support) would be significant.

We used the sequential latent variable score method, or two-stage approach (Ringle, Sarstedt & Straub, 2012; Hair et al., 2013). The two-stage approach estimated the construct scores of the first-order constructs (ability, motivation and opportunity) in a first-stage model without the second-order construct (HPWS) present, and subsequently used these first-stage construct scores as indicators for the higher order latent variable (HPWS) in a separate second-stage analysis. Similarly, construct scores of the first-order constructs (delivery of the deal, trust and fairness) were estimated in a first-stage model without the second-order construct (psychological contract fulfilment-facet) present, and these first-stage construct scores were used as indicators for the higher order latent variable (psychological contract fulfilment-facet).

Hierarchical regression analyses was used to test the specific interaction effect hypotheses in SPSS using factor scores obtained from SmartPLS. The use of factor scores is more appropriate than using raw data as they a) allow for differential item weighting, b) strip out the measurement error and c) handle the formative nature of the constructs (HPWS and psychological contract fulfilment-facet). Adopting a stepwise regression approach, the dependent and three independent variables were entered in Step 1 followed by the interaction variables in Step 2.

The results of regression analysis of the main effects model (see Table 1) showed that the HPWS ($\beta=0.451$, $p<0.001$), FLM leadership behaviour ($\beta=0.202$, $p<0.001$), and co-worker support ($\beta=0.217$, $p<0.001$) are positively and significantly related to psychological contract fulfilment.

< <<<< Insert Table 1 here >>>>>

Hypothesis 1 predicted that there would be a two-way interaction between HPWS and FLM leadership behaviour in predicting psychological contract fulfilment. Contrary to this hypothesis, the results shown in Table 1 indicate the first interaction term (high performance work systems X FLM leadership behaviour) is positive and insignificant. The second interaction term (high performance work systems X co-worker support) is positive and statistically significant, providing some evidence that they are perhaps complements, providing support for Hypothesis 2. The third interaction term (FLM leadership behaviour X co-worker support) is negative and significant, which suggests that the two variables act as substitutes. Thus, Hypothesis 3 is supported. The three-way interaction among HPWS, FLM leadership behaviour and co-worker support was insignificant for psychological contract fulfilment, thus providing no support for Hypothesis 4.

To better understand the form of each interaction, we followed Aiken and West's (1991) 'spot-light' procedures to illuminate the nature of these contingent relations. Separate plots were drawn for employees whose scores on the moderator were 'low' (1 standard deviation below the mean), medium (at the mean), and 'high' (1 standard deviation above the mean). Results are presented in Figure 1. For the relationship between HR practices and contract fulfilment, the slope coefficients were steeper for employees higher in co-worker support ($\beta = .543$, $t = 12.803$, $p < .001$) and shallower for employees lower in co-worker support ($\beta = .302$, $t = 7.008$, $p < .001$), while those at the mean were in-between ($\beta = .425$, $t = 16.403$, $p < .001$). Taken together, these results suggest HR practices impact psychological contract fulfilment for all employees (gradients slope upwards), but had a greater impact for those with good co-worker support indicative of a synergistic, reinforcing relationship.

< <<<<< Insert Figures 1 and 2 here >>>>>

Next, we repeated the analysis replacing HR practices with frontline management as the focal variable, but retaining co-worker support as the moderator. Results of the spot-light analysis are presented in Figure 2. The strength of the relationship between frontline management and psychological contract fulfilment was stronger when co-worker support was lower ($\beta = .282$, $t = 5.501$, $p < .001$) and weaker when co-worker support was higher ($\beta = .143$, $t = 2.844$, $p < .01$), while in-between if co-worker support was at the mean ($\beta = .213$, $t = 6.295$, $p < .001$). Taken together, these results suggest a trade-off with co-workers and supervisors providing similar qualities and support consistent with Kerr and Jermier's (1978) substitutes-for-leadership theory. Finally, turning to the control variables, we found that women were no more satisfied than men ($\beta = -.007$), older employees were no more satisfied than younger ($\beta = .007$), and longer serving employees were no more satisfied than more recent recruits ($\beta = .001$; all t 's < 1). The only exception was that employees with high school education or less (the reference condition) were less satisfied than all other employees in terms of the extent to which they perceived the psychological contract to have been fulfilled (all dummies significant).

Discussion

This study has found support for HPWS, FLM leadership behaviour and co-worker support as predictors of psychological contract fulfilment. Prior research on psychological contract has focused almost exclusively on HPWS, giving relatively little attention to FLMs' leadership behaviour, much less comparing the impact of the two factors. It is only recently that researchers have begun to propose the interactive relationships of HPWS and FLM leadership behaviour. However, no previous study has looked at the interaction effects between these two factors in predicting psychological contract fulfilment. It is important to note that, this constitutes a theoretical argument shared in the SHRM literature (Purcell & Hutchinson, 2007; Stanton et al., 2010; McDermott et al., 2013).

It is important to note that the interaction term between HPWS and frontline management leadership behaviour) is insignificant. This finding is interesting given that the previous studies have suggested theoretical arguments that support symbiotic relationships between HPWS and FLM leadership behaviour (see Purcell & Hutchinson, 2007).

It may be possible to explain this lack of support by employing the arguments proposed by Lee and Taylor (2014) who suggest that there is a possibility that the frontline manager may put self-interest ahead of organisational concerns, which is further manifested in the relationship between employees and the psychological contract. There is the possibility of a psychological contract emerging between the line managers and the employees, which would not be contingent on the HRM practices, as it is based on their personal interests, rather than organisational interests. In such situations, HPWS and FLM leadership behaviour could be viewed as two opposite forces that may offset each other, which may have caused the interaction term to be insignificant. Future research could replicate this study and validate the finding of this research question.

Moving on to the interplay between HPWS and co-worker support in examining psychological contract fulfilment, existing research has limited understanding of the important interaction between HPWS and co-worker support as a potential lever of psychological contract fulfilment. The interaction term is positive and statistically significant, providing some evidence that they are perhaps complements.

Concretely, the effects of HPWS on psychological contract fulfilment became more positive when the level of co-worker support is high and vice versa. This finding suggests that HPWS must not be considered in isolation but in conjunction with human agents, like co-workers.

Evidence in support of interaction suggests that HPWS and co-worker support in combination, are likely to play an important role in predicting the psychological contract fulfilment.

Prior research has shown that co-workers play an active role by sharing their own experiences helping the employees to interpret the HRM practices and thus would influence employee perceptions about them (Mossholder et al., 2011). This suggests that the employees' perceptions of HRM practices and subsequently psychological contract fulfilment will be determined, in part, by how co-workers described them. In other words, it is likely that co-workers would accentuate the impact of progressive HRM practices, resulting in employees forming more positive perceptions of psychological contract fulfilment. Alternatively, co-workers could also amplify the negative effects of HRM practices, causing a more severe negative evaluation of psychological contract fulfilment by the employees.

The investigation of this relationship helps provide a more nuanced understanding of the important connection between FLM leadership behaviours and co-worker support. This interaction term is negative and significant, which suggests that the two variables act as substitutes.

This finding supports the notion that positive leadership behaviours displayed by frontline managers are likely to have a weaker impact on psychological contract fulfilment to the extent that an employee views high levels of support from co-workers. An explanation for this could be that high levels of co-worker support could compensate for lower levels of FLM leadership. This could be explained using the lateral influence among peers, shared leadership, which contrasts with the concept of vertical leadership (Carson, Tesluk & Marrone, 2007). Often members within the team could assume the roles of leader without having formal authority, and thus help other employees, thus reducing the reliance on frontline managers. Likewise, the employees may not seek support from co-workers in case they perceive frontline manager leadership behaviours positively. The employees when satisfied with their frontline managers' leadership behaviours may not explore other avenues like peer interaction and support for interpreting the psychological contract.

The three-way interaction among HPWS, FLM leadership behaviour and co-worker support was insignificant for psychological contract fulfilment. The lack of support for the three-way interactions in predicting psychological contract fulfilment suggests that each of the three two-way interactions in predicting psychological contract fulfilment does not depend on the strength of the third variable. Several reasons could cause this interaction term to be insignificant, including the dominance of the direct effects and the three two-way interaction effects. This finding should be investigated and validated further in subsequent studies.

Theoretical and practical implications

Theoretically, this paper contributes to previous knowledge in a number of ways. This paper responds to calls for psychological contract research to examine the role of human agents like frontline managers and co-workers who may influence employees' perceptions of the psychological contract. Also, this paper examines the antecedents of psychological contract fulfilment using an interactional approach.

Methodologically, this paper uses PLS-SEM to compute factor scores for further regression analyses, which accounts for the formative nature of two constructs in the study, HPWS and psychological contract fulfilment (facet). In the absence of prior evidence of such treatment, the analyses of this study provide a number of useful findings which future researchers may find informative.

From a practitioner standpoint, this paper adds to the attempts at bridging the gap between theory and practice. Concurrent with the prior research, this paper helps to convey messages to practitioners regarding the crucial role HPWS play in shaping the employees' evaluation of psychological contract. Further, this study identifies the importance of frontline managers and co-workers for enhancing employee perceptions of psychological contract, together with HPWS. It suggests that frontline managers, through their leadership behaviours, play an active part in influencing the psychological contract. Similarly, high levels of co-worker support enable employees to form positive perceptions of psychological contract.

Limitations and future research

The findings must be interpreted against a backdrop of the limitations of the study, which in turn could guide future research. First, the current research design is cross-sectional. The survey measures were collected concurrently and thus only levels of associations between variables could be tested. Cross-sectional research design limits the extent to which cause-effect relations can be inferred from the findings. Future research may employ a longitudinal research design which would be better suited to addressing the causal issues of the variables examined in this study.

The second concern is that the data were obtained from a single source (i.e. front line employees) and was self-reported. It was deemed appropriate as employees should be best placed to report the perceptions of the variables included in the study. However, there is a possibility that the employees may not be completely accurate and could lead to a potential bias in the results.

Steps were taken both to limit and to assess potential effects of common method variance using the recommendations of Podsakoff et al. (2003, 2012) for survey design. In the cover letter, we assured employees that their responses would be treated anonymously and data were being collected for purely academic purposes. For the perceptual variables, we included multi-item constructs, based on previously well-known, tested, and validated scales, which tends to minimise the chances that deficient wording of the questions could steer the employees to provide socially desirable responses.

A third limitation is the generalisability of the model. Data were obtained from a single geographic area, India, which could limit the generalisability of the findings to other geographic areas. It would be difficult to ascertain the degree to which the results of this study would be generalisable to other countries without additional examination. Further research of this nature is required in different contextual settings to expand our knowledge in this arena.

Nevertheless, this paper represents an important step toward uncovering the mechanisms linking HRM practices, frontline managers and co-workers to psychological contract fulfilment.

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Table 1: Model with two-way and three-way interactions

Variables	Main Effects	'Main' + Two-way Interactions	Full Model
Constant	-0.105 (-0.458)	-0.138 (-0.609)	-0.137 (-0.607)
High performance work system (HPWS)	0.451 ^a (18.015)	0.424 (16.455)	0.425 ^a (15.810)
Co-worker support (CWS)	0.217 ^a (3.605)	0.243 ^a (4.682)	0.245 ^a (4.540)
Frontline management (FLM)	0.202 ^a (6.176)	0.212 ^a (6.728)	0.213 ^a (6.840)
HPWS x CWS		0.123 ^a (3.434)	0.123 ^a (3.460)
HPWS x FLM		-0.006 (-0.195)	-0.005 (-0.169)
CWS x FLM		-0.069 ^c (-1.862)	-0.070 ^c (-1.836)
HPWS x CWS x FLM			-0.003 (-0.171)
Gender (female = 1)	-0.074 (-1.511)	-0.070 (-1.452)	-0.070 (-1.467)
Age	-0.009 (-1.135)	-0.007 (-0.879)	-0.007 (-0.873)
Tenure (months)	0.001 (1.113)	0.001 (0.816)	0.001 (0.819)
Education – Some college ^d	0.414 ^a (2.392)	0.393 ^a (2.438)	0.392 ^a (2.416)
Education – Degree ^d	0.391 ^a (3.339)	0.360 ^a (3.027)	0.359 ^a (3.019)
Education – Post-graduate ^d	0.392 ^a (3.456)	0.369 ^a (3.203)	0.368 ^a (3.204)
R ²	0.515	0.526	0.526
AIC	2195.262	2178.392	2180.353
BIC	2249.594	2247.541	2254.442

Key: Unstandardised slope coefficients; *t* values in parenthesis. *a* = *p* < .10, *b* = *p* < .05, *c* = *p* < .01 based on 2-tailed tests. Education – high school or less is the reference condition (d).

Figure 1
**Effect of HR Practices on Psychological Contract Fulfilment
for Different Levels of Co-worker Support**

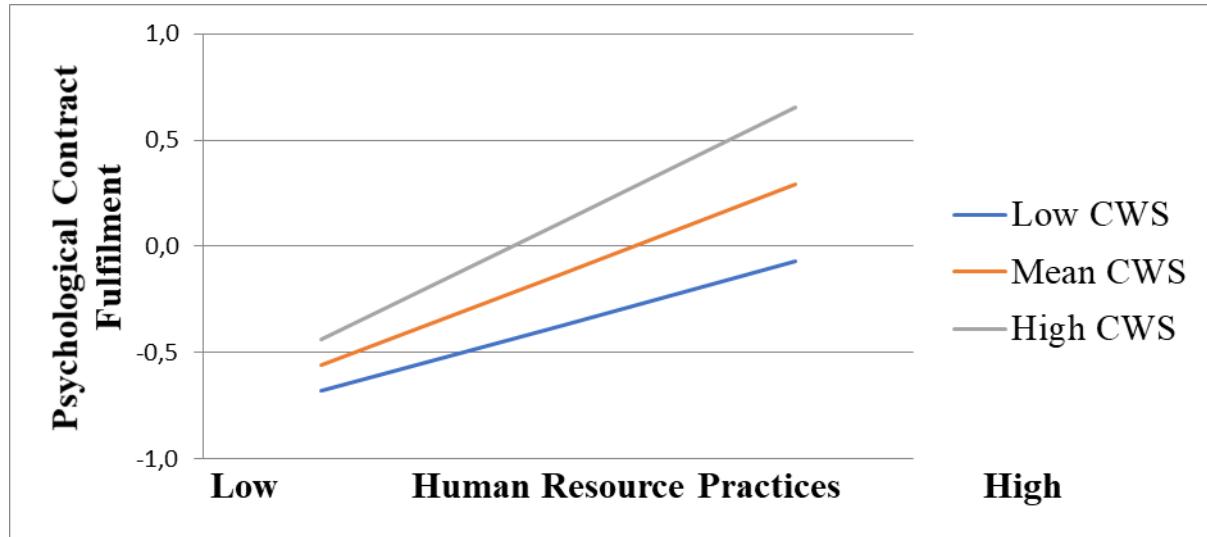
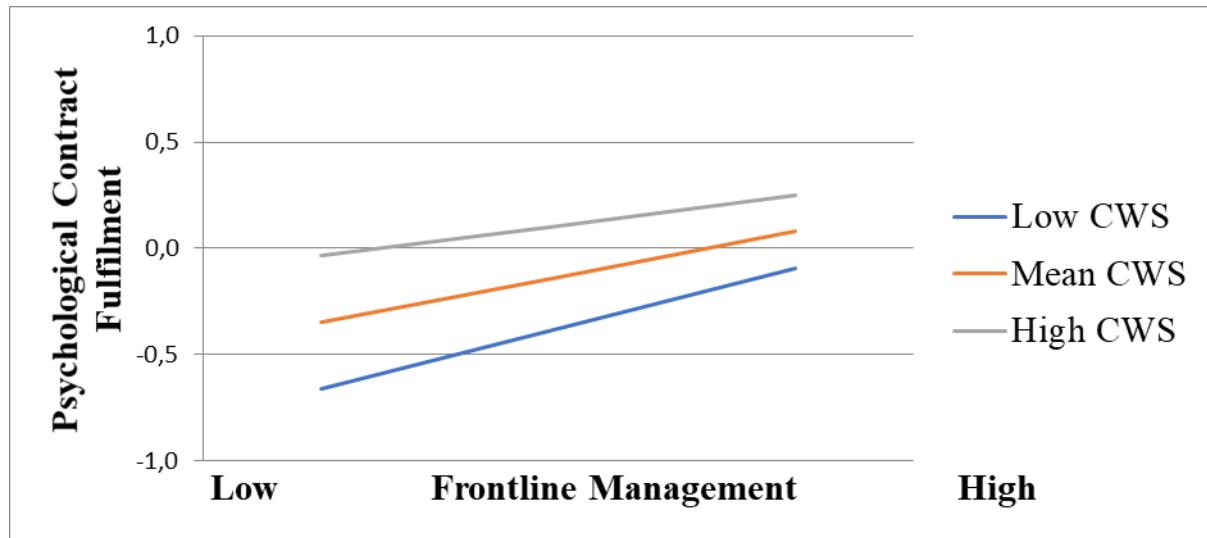


Figure 2
**Effect of Frontline Management on Psychological Contract Fulfilment
for Different Levels of Co-worker Support**



Three Essays on Competitive Dynamics and Imitation

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Abstract

This dissertation includes the research I conducted in the fields of competitive dynamics, imitation and negotiation. It is composed of three essays. The first and the second essay deal respectively with the role of timing when firms imitate a new product technology and with its evolutionary consequences for market equilibrium. These two essays have been tested with data on handset technologies introduced in the UK market from 1997 to 2008. The third essay is an experimental work that deals with the issues of coordination during the emergence of conventions.

Chapter 1. Speed of imitation of competitors' innovation. Performance implications and contingency factors

1.1 Introduction

The seminal work of Levitt (1966) pointed to the importance of the speed of imitation to increase the firm performance. Though imitating rivals' innovation is fairly common, lots of companies fail to do it effectively (Markides and Geroski, 2004). The topic of imitation has drawn the attention of various scholars in the management literature but the authors that have explored the performance implications of imitation strategies, have obtained quite mixed empirical findings. Some authors have shown that imitation is beneficial for firm performance because it decreases costs and competitive risks, increases the acceptability of organizational actions (Miller and Chen, 1996), legitimates the firm to industry norms (Chen and Hambrick, 1995), and helps to promote network effects and standards, with broad potential benefits for firms and consumers. By contrast, other studies (Porter, 1985) suggest that imitation likely leads to intense direct competition and then mediocre performance, and therefore it is better to have some distinguishing characteristics. Finally, some authors (Deephouse, 1999) show that best performing firms are those that are able to find a balance between imitation and differentiation.

Although the extant literature offers various evidence on the performance implications of imitation, very few empirical studies have explored if performance is determined not only by the imitation per se, but also by the firm's *velocity* to imitate (Ethiraj and Zhu, 2008; Lee and Smith, 2000). This is surprisingly given that *speed of competitive response* is for competitive dynamic literature one of the main tools to sustain a competitive advantage (D'Aveni, 1994). In this study, we borrow from the imitation literature and competitive dynamics studies on response timing with the aim to shed more light on the relationship between *speed of imitation* and firm performance. In particular, in our analysis, the objects of imitation strategies are new product technologies allowing the product to performance brand new functionalities. They can represent a

cost and a risk for adopting firms, but may also offer the chance to achieve competitive advantage through product differentiation with respect to late imitators. Our argument is that: (a) speed of imitation can have important performance consequences for the imitators, and (b) the relationship between speed of imitation and performance is shaped by a set of moderating forces.

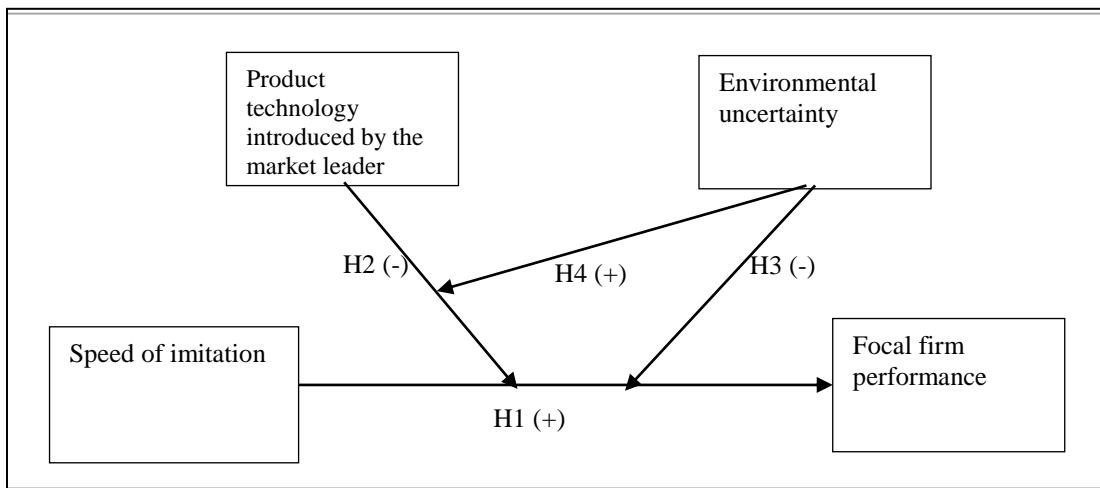
We attempt to complement the extant imitation literature in several ways. First we have found a shortage of empirical studies that look at the relationship between speed of imitation of competitors' innovation and firm performance. In fact, on the one hand, most of previous research has measured imitation with binary variables, i.e., yes/no (Greve, 1996) or with distance indicators expressing the level of imitation (Deephouse, 1999), almost ignoring the *speed* component (Lee and Smith, 2000). On the other hand, the few studies exploring the performance implications of imitation speed, compare them to the innovator (Ethiraj and Zhu, 2008; Lee and Smith, 2000) while scarce attention has been devoted to performance differences among imitation strategies.

Second, we seek to advance our understanding of timing of imitation–performance relationship by providing clear guidelines about the implications of pioneer's status on the imitators performance.

Third, imitation theorists cast environmental uncertainty as an important exogenous factor influencing the firm's choice about which reference target to follow (Haunschild and Miner, 1997; Gaba and Terlaak, 2013). For example, when uncertainty are high, the leader is the most likely imitation candidate since it is perceived as having more information about how technologies and demand will evolve. On the contrary we found a shortage of studies analyzing the performance implications of imitation in uncertain environments.

By bridging information-based and rivalry-based imitation literature (Lieberman and Asaba, 2006) with studies on speed of competitive response (Chen and Hambrick, 1995), in this article we develop a set of hypotheses on the speed of imitation–performance relationship that are synthesized in Figure 1.1.

Figure 1.1 - Research model: performance implications of speed of imitation



1.2 Sample

We test the proposed hypotheses on the performance implications of speed of imitation in the specific context of the UK mobile phone industry. For the purposes of this study, 22 product technologies introduced in the UK mobile phone industry by 13 handset vendors, operative from

1997 to 2008, were extracted from the specialist industry magazines *What Mobile*, *What CellPhone* and *Total Mobile*. Overall, 566 new mobile phones were introduced in the UK market over the 1997–2008 study period. We excluded from our sample smartphone devices. Over the analyzed study period, sales of smartphones represented a relatively minor portion of vendors' total sales.

1.3 Results

We tested our hypotheses with random-effects regression models. The sample contained 181 observations. Each observation corresponds to the imitation of a certain technology by the firm. Not all firms in our sample adopted all the 22 sampled technologies. Table 1.1 offers a synthesis of the predicted hypotheses and those that were supported by the empirical analysis.

Table 1.1 Predicted Hypotheses and Obtained Findings

Hypotheses	Predicted relationship	Obtained findings ^a
1	Positive effect of a Speed of imitation (SOI) on performance	Positive
2	Negative moderating effect of Leader on the relationship between SOI and performance	Negative
3	Negative moderating effect of Environmental uncertainty on the relationship between SOI and performance	Not significant
4	As environmental uncertainty increases, its negative effect on the SOI–performance relationship is weaker for technologies introduced by the leader	Positive (Fig.1.3)

^a Relationships supported by the empirical analysis are in bold

1.4 Discussion

Our findings suggest that, overall, best performing challengers are those that imitate more rapidly new product technologies introduced by rivals. Moreover we found that imitating quickly *technologies introduced by the market leader* may be detrimental for firm's performance (Hypothesis 2 – Figure 1.2), unless the environment is highly *uncertain* (Hypothesis 4). In fact, when the environment changes from certain to uncertain, performance of firms imitating quickly new technologies introduced by the leader is less penalized than performance of firms imitating quickly new technologies introduced by other rivals (Figure 1.3). This results complement both the rivalry-based imitation (i.e., imitation for competitive purposes, when environmental uncertainty is low) and information-based imitation (i.e., imitation aimed to gather information about the environment to mitigate uncertainty) literature (Lieberman and Asaba, 2006), pointing to the importance for the firm to use rapid imitation to maintain competitive parity with non-leader pioneers when environmental uncertainty is low, while orient the rapid imitation attacks towards the market leader pioneers when uncertainty is high. Firms that imitate the leader pioneers when uncertainty is low or deviate from the leader pioneers when uncertainty is high, will be at a competitive disadvantage.

Figure 1.2. SOI x Market leader

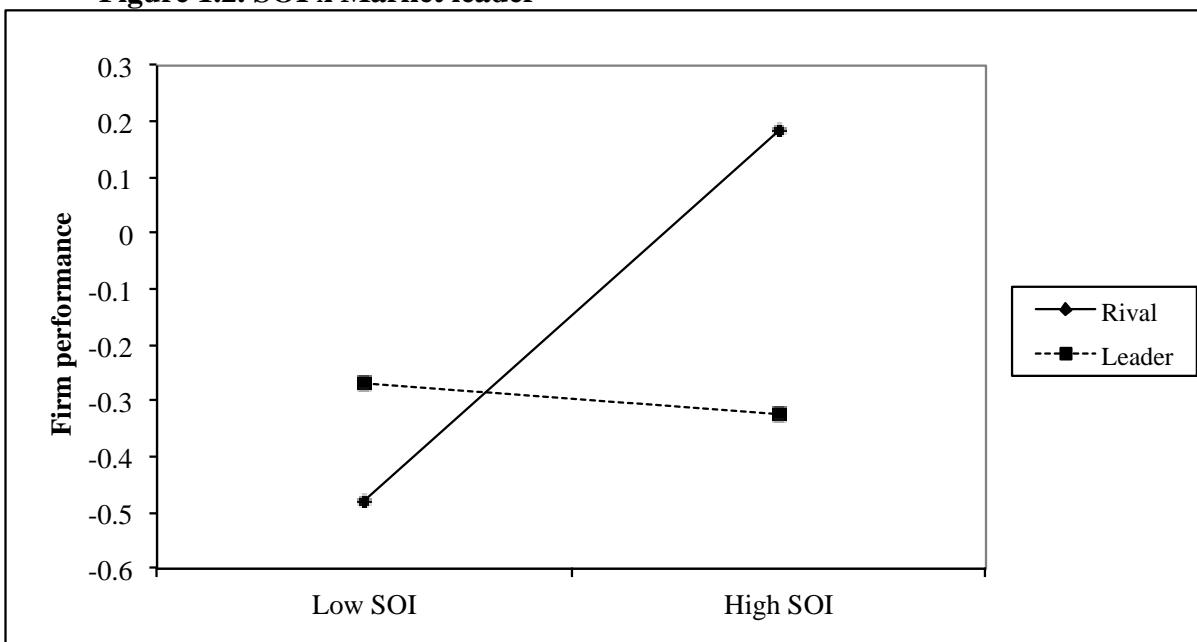
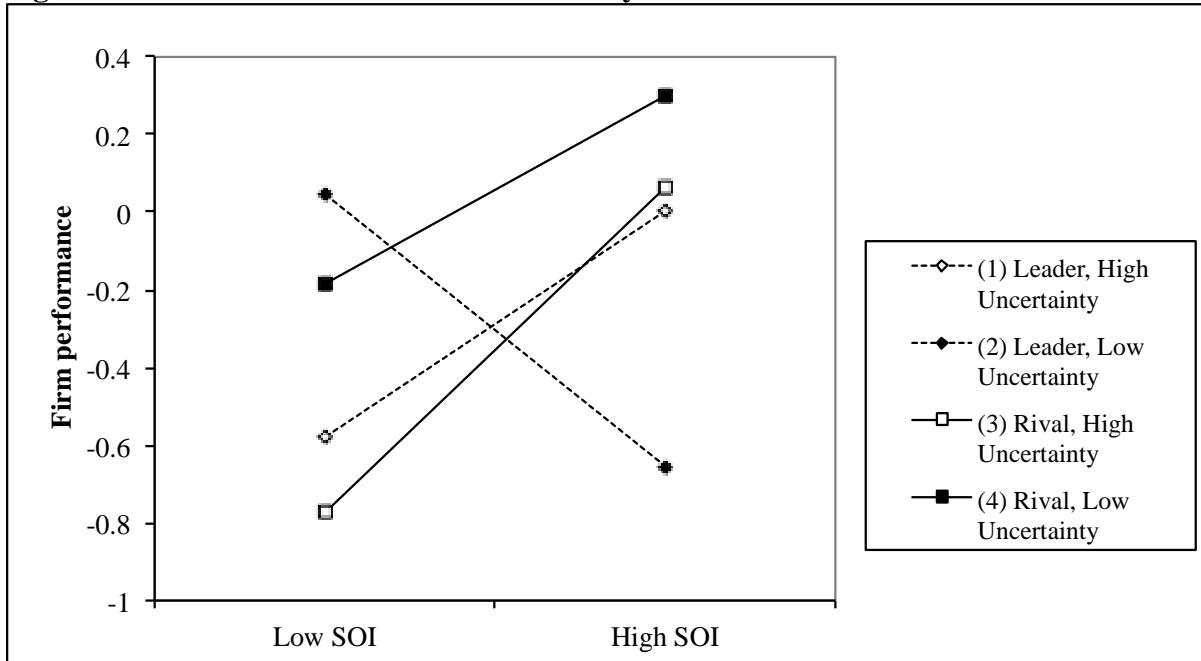


Figure 1.3. SOI x Market leader x Uncertainty



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Chapter 2. The Red Queen Competition: A product technology imitation perspective

2.1 Introduction

Management scholars and practicing managers have often remarked that competition is becoming increasingly fierce and dynamic, making it difficult for firms to choose which actions to undertake to defend their competitive position and sustain their performance relative to rivals. In such turbulent environments, firms often face a dilemma: innovate or imitate rivals' actions. Although with innovation firms differentiate their resources and market position from those of rivals (Lieberman & Montgomery, 1988), innovation "is often difficult and risky [...] firms therefore often choose to pursue homogeneous strategies, where they match the behavior of rivals" (Lieberman & Asaba, 2006: 374). However, given the dynamicity of today's competitive environments, in which circumstances do firms rely more heavily on *imitation*, and when this competitive action proves to be successful?

The idea that competition is a dynamic market process rather than a static market outcome has been extensively examined in the competitive dynamics literature (Smith, Ferrier, & Ndofo, 2001), that builds on Schumpeter's "creative destruction" (Schumpeter, 1942). The intrinsic disequilibrium of markets arises because the actions of one firm, or group of firms, trigger reactions by other firms, which in turn produce a series of actions and reactions that continue as long as firms seek to improve their competitive position. This co-evolutionary process by which firms act and react to changes in the competitive environment has been shown by organizational scholars to influence both firm performance and industry structure (Nelson & Winter, 1982). Many of the same scholars see parallels with biological evolution, notably the work of Van Valen (1973) who studied the co-evolution of dynamically interacting species: alluding to Alice in Lewis Carroll's *Through the Looking-Glass*, he hypothesized a "Red Queen effect" that explained the constant probability of species' extinction regardless of their previous duration. What holds for biological evolution is in principle also the case in business contexts where we can speak of "Red Queen competition" (Barnett & Hansen, 1996): the continuous and escalating activity of firms trying to maintain relative fitness in a dynamic system, such that they end up racing as fast as they can just to stand still relative to competitors.

With our study, we aim at complementing the extant literature in several ways. First, in this study we focus on the imitative reactions to explain the reciprocal back-and-forth moves that trigger and sustain Red Queen competitive imitation in technology-intensive industries.

Second, thus far, competitive dynamics studies have not examined how changes in the technological environment may affect the Red Queen cycle. For example, recent studies by Madhok, Li and Priem (2010), and Posen, Lee and Yi (2013) show that as industries evolve, changes in technological diversity and diffusion can influence rates of imitation. Their observation complements prior work by authors such as Utterback and Suarez (1993), who point out that as the industries mature, they tend to transition from high to low levels of *product technology heterogeneity*, where low levels of product technology heterogeneity correspond to the emergence of design dominance. The paper also examines how product technology heterogeneity moderates the Red Queen effect.

2.2 Theory

Red Queen deals with a reciprocal back-and-forth process where roles are often reversed over time. In this paper, we distinguish between the "focal firm" and "rivals". The 'focal firm' refers to the industry player whose imitative moves are under examination by other firms who constitute "rivals" in a specific point in time. For example, we could say that at time t , the "focal

firm” having observed new product technologies introduced by one or several of its “rivals” in $t-1$, must decide how many of these technologies it should imitate. In this context, “rivals” are all the other firms within the industry that the “focal firm” sees as competitors. “Rivals”, for their part, observe the focal firm’s moves, gauge the resulting performance, and decide on how many of these moves they should imitate at time $t+1$. This turns the rival firms into focal firms who are now observing and analyzing moves recently made by rivals. Their actions challenge rivals who must now consider their moves, and so on.

In synthesis, the baseline Red Queen competitive imitation we will theorize in this section works as follows. Focal firms successful in carrying out imitations of new product technologies reap performance advantages because they occupy a “monopolistic” position vis-à-vis rivals that imitate either less intensively (i.e., lower imitation scope) or are slower to imitate (i.e., lower imitation speed). The excess performance of focal firms that imitate either more intensively or more rapidly and the losses and lost opportunities experienced by rivals, motivate the latter to respond by increasing their imitation scope and speed. However, a long-term equilibrium is never reached. For focal firms, the performance losses will be higher the more intense and quicker rivals’ imitative response. The role of “innovation” in this self-reinforcing cycle is the one of triggering the Red Queen effect, but not to sustain it: the intrinsic disequilibrium of markets arises because the innovation of one firm triggers imitative reactions by other firms, which in turn produce a series of other imitative actions that continue as long as firms seek to maintain competitive parity. As also noted by some authors: “rivalry-based imitation often proceeds over many rounds, where firms repeatedly match each other’s moves.” (Lieberman & Asaba, 2006: 380). Figure 2.1 depicts our research model, showing the hypothesized relationships.

2.3 Sample

We test the proposed hypotheses in the specific context of the UK mobile phone industry from 1997 to 2008. Since technologies may evolve over time, we decide to analyze new product technology imitation by considering both the first version of a technology introduced in the market and successive improvements. During this period, 48 new product technologies were installed in 566 new mobile phones. Handsets compete by offering consumers functionalities that are made possible by product technologies. In some instances, similar functionalities may be offered by different product technologies. Following the work on complex systems of Murmann and Frenken (2006), we define a “technological system” as a group of technologies allowing the product to perform homogenous functions such as: networking; high speed data transfer; phone call; connectivity; messaging; display; technological convergence. At this level we operationalize the firm imitative action (i.e. scope and speed), the rivals imitation (i.e. scope and speed) and the product technology heterogeneity. The latter was measured using the entropy index (Shannon, 1948). This measure is suitable for our setting as it captures the extent to which products differ in terms of technologies that belong to a given technological system. As such, the index can be used as an indicator of technological heterogeneity (Frenken, Saviotti & Trommetter, 1999).

2.4 Results

Following the method outlined by Derfus et al. (2008) we tested hypotheses by means of three regression models: (1) a robust fixed-effects regression when the dependent variable is the focal firm performance ; (2) a robust fixed-effects regression when the dependent variable is rivals’ average speed of imitation; (3) a robust fixed-effects Poisson regression when the dependent variable is rivals imitation scope, a count-type variable. Table 1 offers a synthesis of the predicted hypotheses and those that were supported by the empirical analysis.

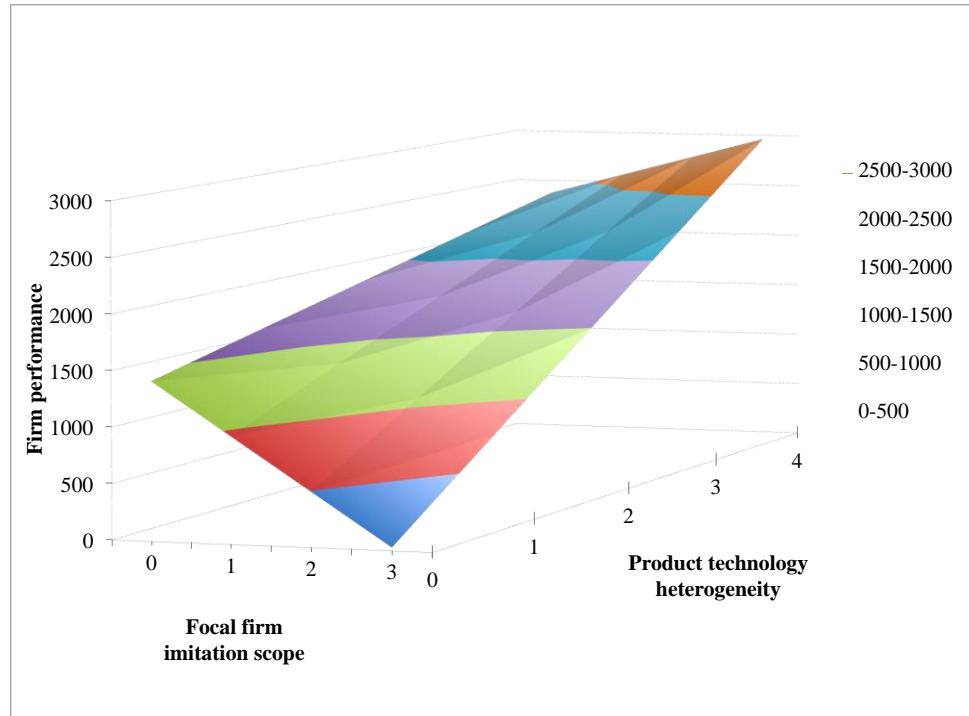
Table 2.1 Predicted Hypotheses and Obtained Findings

Hypotheses	Predicted relationship	Obtained findings ^a	
		Imitation scope (Hypotheses a)	Average imitation speed (Hypotheses b)
1	Positive effect of a focal firm imitative actions on its performance	Negative ^b	Positive
2	Positive effect of a firm imitative actions on rivals' imitative actions	Positive	Not significant
3	Negative effect of rivals' imitative actions on focal firm performance	Negative	Negative
4	Negative moderating effect of product technology heterogeneity on the relationship between a focal firm imitative actions and its performance	Positive	Not significant
5	Negative moderating effect of product technology heterogeneity on the relationship between rivals' imitative actions and focal firm performance	Negative	Not significant
6	Negative moderating effect of product technology heterogeneity on the relationship between focal firm imitative actions and rivals actions	Negative	Not significant

^a Relationships supported by the empirical analysis are in bold

^b Positive for high levels of product technology heterogeneity (Figure 2.2)

Figure 2.2 Focal Firm's Imitation, Product Technology Heterogeneity and Firm Performance



2.5 Discussion

The overall interpretation of the results related to our baseline model of Red Queen competitive imitation, i.e. Hypotheses 1-3, suggests that speed of imitation has a greater positive effect on focal firms (and rivals) performance than imitation scope, but it is a more difficult competitive response for firms to undertake.

In line with our predictions, we also found that product technology heterogeneity negatively moderates the effect of rivals' imitation scope on the focal firm performance. When products differ highly in term of the technologies they incorporate, the imitative response that rivals undertake will have a greater negative effect on the focal firm performance. The basic reason, as we see it, is because firms have to cope with greater uncertainty about the performance of new technologies, and this gives rivals an imitative advantage: they can observe the performance outcomes of the focal firm's imitative action and then imitate (in the following period) only new technologies that have demonstrated greater acceptance by consumers. In this way, rivals strengthen their competitive position with respect to the focal firm by investing only in value enhancing technologies. Overall, these findings about the moderating effect of product technology heterogeneity supports the argument, encountered elsewhere in the Red Queen literature, that learning from competitive experience will be less effective if firms encounter a series of environmental shocks that render their learning capability obsolete (Derfus et al., 2008). Bearing in mind that product technology heterogeneity changes, which in turn influences the pace of technological change, we believe that our results also contribute to research on how technological changes in technology-intensive industries may influence the way firms compete (Agarwal, Sarkar, & Echambadi, 2002; Utterback & Suarez, 1993), as well as their ability to preserve their performance vis-à-vis rivals (Bayus & Agarwal, 2007).

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Chapter 3. An experiment on meaning negotiation

3.1 Introduction

While in the previous chapters I have studied how the imitative strategies are practices widely used by firms to improve their performance in this chapter I attempt to shed light on the practices that enable a broader knowledge transfer such as codifying knowledge (Zander and Kogut, 1995) and building trust relationships (Szulanski et al. 2004). To deal with that I used the model of a communication as it provides processes, concepts and logic by which organizations relate and respond each other. The metaphor has been already used in the competitive dynamics literature to understand competitive-response timing (Smith and Grimm, 1991). In the simplest form communication can be seen as the transmission of messages from a sender to a receiver. What it is less clear is how sender and receiver contribute to the communication, and how this can be established by the acts of communication. Therefore in this chapter I analyze the principles that govern the division of coordination labour between interlocutors.

The use of language is a joint activity to achieve a common goal of communicative success. Clark (1996) proposed that conversation shares fundamental features with other joint activities such as dancing or rowing in pairs. What defines these types of activities is coordination: a mutual process by which actors take in consideration the intentions and actions of their partners in planning and performance of their own action (pp.61-62: 1996). The picture that we can get from these interactions is a continuous shift of individual descriptions producing idiosyncratic conventions typical of the specific contexts in which they emerge.

In this chapter I will look at meaning negotiation: a process in which individuals starting with a different conceptual representation of a picture converge to an agreement during the course of particular types of dialogues. The dialogues considered were recorded during a computer game design to elicit conversation in a restricted setting. In the game players collaborate solving a “referring problem” where verbal communication is the only medium available to the agents. The process is typically a sequence of offers and counter-offers that can be accepted or rejected (Clark and Schaefer, 1989). Interlocutors jointly participate to these activities breaking the boundaries of the assigned role of speaker and listener. Therefore they try to establish a shared conception of what is discussed, finding agreements that are coherent to this model.

3.2 Theory and hypotheses

Meaning negotiation suggest that lexicon does not uniquely identify the meaning of an utterance, and thus there is room left for a process of further determination through some type of interaction among communicating agents. As in a lexical entrainment individuals develop heuristics to understand each other during conversation (Garrod and Anderson, 1987; Pickering and Garrod, 2004). Mainly this process explains the tendency to adopt a term introduced by the interlocutor in the conversation. These terms can be temporary conversational pact that individuals develop during their conversation to overcome, for example, the ambiguity due to different synonyms. Indeed as individuals do not agree *ex ante* on the lexical choice, and differences in their preferred one may actually mark subtle differences in the way they conceptualize the situation at hand, once such a “pact” is reached, individuals can repeatedly and confidently refer to an object with the same term arriving to define a similar lexicon.

Brennan and Clark notice some features of conceptual pacts that are worth reporting here. First of all, “conceptual pacts are established by speakers and addressees jointly” (Brennan and Clark, 1996: 149). They are the result of an interactive process that may involve different rounds,

lexical proposals and counterproposals, and may imply also disagreement. If the partner accepts a proposal, the contribution enters the common ground, so that both interlocutors assume that is shared knowledge. For this reason lexical pacts are considered specific to a given speaker-addressee pair. In other words they tend to reflect the specific relation between the two and the process through which an agreement has been reached – the same speaker may reach different pacts with different addressees. Although the interlocutors tend to converge to the same expression, this convergence could be not necessary for the common ground even if it would greatly impoverish conversation. In fact the emergence of conceptual pacts on the early stages of a conversation has been shown to be a good predictor of the overall cooperative success of communication (Reitter et al., 2007; Nenkova et al., 2008).

In the literature, the most widely studied case entails no role for individual preference for a given conceptualization. This can be due to different lexical preference to conceptualize a certain object, or to an incomprehensible conceptualization of a definite object. In this case it could be necessary the implementation of an exchange in terms of conceptual shifts, a concept similar to what we used to refer as negotiation.

In this paper, we will argue a lexical and conceptual co-ordination is often achieved within any particular dialogue through a strong collaborative effort. In support of this claim, we present evidence to indicate that pairs have developed idiosyncratic languages, which are dependent upon local and transient conventions set up during the course of the dialogue. Then we observed how a utilitarian preference over a certain conceptualization could change the way in which pairs organize the mechanism of alignment. We present evidence that negotiated interaction are present at the level of the concept despite the inefficient effect of their implementation.

3.3 Experimental methods

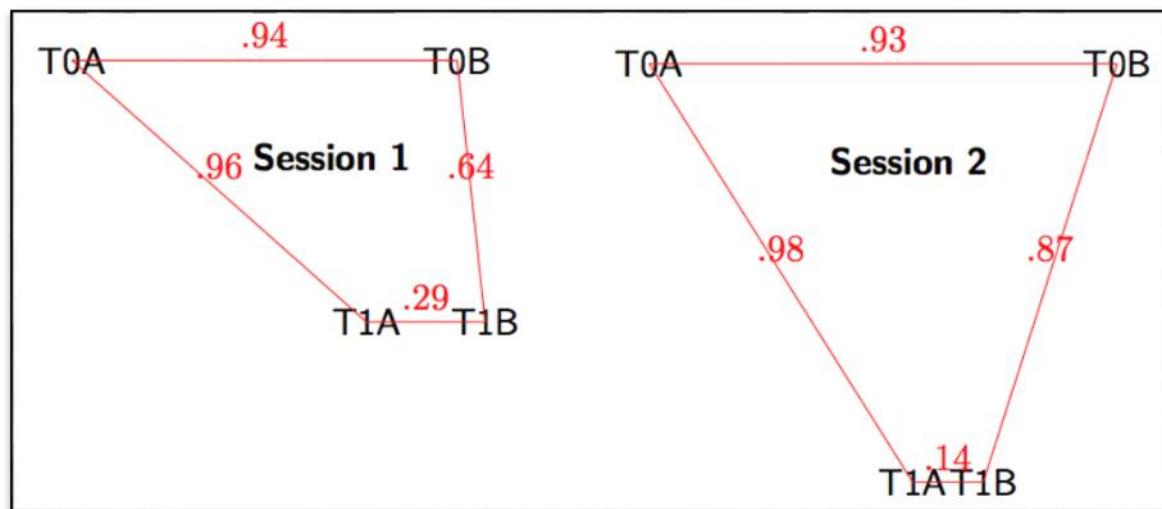
Our experiment develops a paradigm first explored by Clark and Wilkes Gibbs (1986). The experiment is played on PCs and entirely managed by a computerized “game master”. There are dyads of (randomly paired) players. Each player faces a same set of 16 tangram pictures on a computer screen. However, the pictures are in a different random order for each player. There are two stages and 160 rounds in each stage. At each round, one of the players is drawn by the computerised “game manager” as the *speaker*, while the other player is the *responder*. The speaker sees one of the 16 tangram pictures on the right of the screen as the *target*, while the responder needs to find out which of the 16 pictures corresponds to the target seen by the speaker. In order to coordinate, they can speak through an audio channel (all players have a set of noise insulating headphones with a microphone). The responder can indicate a picture as a candidate solution by clicking on it. If the picture is the right one, a new role of speaker is randomly drawn and pictures are again sorted in random order. Players are rewarded for the time of task completion (the shorter the better) and for errors made before the correct identification in each round (the less errors the better). After the first phase, players are again paired in new dyads, different form the original ones.

At the beginning and at the end of the each stage, each player has to write a sort of private “dictionary” where he associates to each pictures a short description if it. We will use these vocabularies to compare and analyse lexical changes in the way each player refers to each picture. We recruited 48 undergraduate students at Ca’ Foscari University of Venice, (25 women and 23 men), to participate to an experiment on meaning negotiation. They were invited in groups of four.

3.4 Results on meaning negotiation

The experiment is the first, to our knowledge, to produce evidence that lexical agreements is a process of meaning negotiation whose outcome is affected by the relative willingness to concede of interlocutors. In particular, by using a two-stages design to manipulate the cost agents have sunk in generating a code, we show the emergence of a preference for symmetric outcomes in the second stage of the experiment (Figure 3.1). An interpretation seems to be that it is harder to find intermediate “fair” solutions when players are close, and this generates a longer (and less effective) search for solutions in the word space. This supports the hypothesis that “semantic fairness” plays an important role in the process of lexical agreement.

Figure 3.1 Distances between private vocabularies before and after stage 1 and 2



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Influences on Transfer Effectiveness: An Exploratory Study of Headquarters Transfer of Capabilities to Subunits in the Multinational Corporation

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INTRODUCTION & RESEARCH GAP

As multinational corporations (MNCs) add new subunits that serve different geographical- and product- markets, their internal organization gradually becomes more complex. This increasing complexity manifests not only in the wider range of products manufactured and marketed by the MNC, but also in the different ways these products are developed. Although such diversity can be advantageous for an MNC, it can also make coordination of, and cooperation between, subunits difficult. One way in which headquarters can create commonalities between subunits is by transferring a single way of working, i.e., a single capability, to several subunits. The effectiveness of such a transfer depends on the extent to which a recipient unit is able to implement the transferred capability.

The transfer of capabilities is critically important as firms' competitive advantages are increasingly seen as relying on their ability to perform key activities (such as innovation, production, marketing) better than their competitors. This ability, in turn, is based on a firm's capabilities. The ability to transfer capabilities thought to be superior⁵ to those of other units in the firm is therefore central to competitiveness for large firms and why increased understanding of the influences on effectiveness in transfers of capabilities is critically important.

However, capabilities are also particularly complicated to effectively transfer and, as a consequence, headquarters attempts at transferring capabilities to subunits is, while potentially promising, an activity that can be seen as possibly precarious. This is because both capabilities and innovation activities are notoriously complex and because ineffectiveness in transfers may lead to problems that are detrimental to the competitiveness of the MNC. While a synthesis of the extant literature shows that capability transfers are critically important, we still know little about the conditions under which headquarters are able to effectively perform them.

The wider literature on transfer effectiveness makes distinctions between vertical transfers between headquarters and subunits and lateral transfers between two subunits (e.g. Michailova & Mustaffa, 2012; Minbaeva, 2007), as well as in what direction the transfer occurs (e.g. Gupta & Govindarajan, 2000; Mudambi, 2002). Interestingly and despite of the much argued importance of acknowledging the different dynamics of headquarters-subunit transfers as compared to subunit-subunit transfers (e.g. Gupta & Govindarajan, 2000; Mudambi, 2002; Tran et al., 2010), research on effectiveness in headquarters-subunit transfers mainly consists of testing constructs

⁵ Whether any given capability actually is superior is a separate question.

derived from transfers between subunits. As a consequence, few new influences on effectiveness in headquarters-subunit transfers of capabilities have been identified.

RESEARCH QUESTION

This dearth of novel influences to transfer effectiveness means that the allegedly different dynamics in headquarters-subunit transfers (e.g. Gupta & Govindarajan, 2000; Mudambi, 2002) have not yet been explicitly investigated in research focusing on effectiveness. However, initial findings from related types of headquarters-subunit transfers lend support to the claims made by Gupta and Govindarajan (2002) and Mudambi (2002) regarding the different dynamics of effectiveness in headquarters-subunit transfers (Schleimer et al., 2014; Schleimer & Pedersen, 2014; Verbeke et al., 2013). Considering that both theoretical reasoning and empirical findings in adjacent fields point to potential but yet unidentified influences on effectiveness in headquarters-subunit transfers of capabilities, it is here argued that a study focused on exploration for the purpose of identifying novel influences of this kind is suitable.

As was the case at Volvo Construction Equipment, the global operations of many large MNCs today constitute an environment that is increasingly heterogeneous, both internally and externally. The sometimes widely different internal and external contexts of subunits and the innovation projects they host, as well as the inherent complexities of both innovation capabilities and innovation activities, makes it reasonable to expect the effectiveness of headquarters transfer of capabilities to subunits, and specifically to the innovation projects they are hosting, to vary across a global organization. That this type of headquarters role is difficult, and can be expected to vary in effectiveness, has also been pointed out in recent research on the role of headquarters (e.g. Forsgren & Holm, 2010) yet has not been a focus of the literature on effectiveness in headquarters transfer of capabilities to subunits (e.g. Jensen & Szulanski, 2007; Kostova & Roth, 2002; Minbaeva, 2007). Although variation in the effectiveness of such transfers has been found, why some receiving subunits are more able to adopt a certain capability than others has not been extensively investigated. This is a research focus that both practically and theoretically constitutes a critical challenge for MNCs, and that lies at the heart of the research gap on the role of headquarters in transfers of capabilities to subunits.

Given the lack of research about what influences the effectiveness of headquarters transfer of capabilities to subunits, and specifically across the projects that do the actual innovating, this thesis explores the following research question:

Why does the effectiveness of headquarters transfers of capabilities to subunits vary between different subunit innovation projects?

The research question is phrased in this particular way to capture the fact that it concerns: (1) headquarters as the sender in the transfer, (2) capabilities, (3) the subunit innovation projects that are receiving the capability, and (4) the variation in effectiveness of these transfers across innovation projects.

The research question can be seen as both theoretically and empirically derived in the sense that (1) the interest resulting in a general research question was first inspired by literature on the value-creating role of headquarters. (2) The subsequently identified empirical phenomenon of headquarters transfer of innovation capabilities to R&D sites at Volvo Construction Equipment was then related back to more focused literature on effectiveness in headquarters-subunit transfer of capabilities in MNCs.

PURPOSE

The theoretical purpose of this study is to make an in-depth, exploratory investigation into transfer effectiveness, a phenomenon that has been greatly emphasized in literature yet which has thus far been the focus of little empirical investigation in the context of headquarters-subunit transfer of capabilities. This in order to provide implications for the challenge of achieving effective intra-MNC transfers of capabilities from headquarters to subunits. This will be done by identifying influences explaining this variation in transfer effectiveness between the receiving subunits and in doing so providing implications for managers and theory as well as opening up avenues for future research on an important yet under-studied phenomenon.

In line with this purpose the thesis answers the calls by Gupta and Govindarajan (2000), Schleimer et al. (2014) and Schleimer and Pedersen (2014) who argue that further inquiry is warranted into how factors both internal and external to the transfer as well as to the units involved may influence subunits' ability to adopt capabilities transferred from headquarters. Echoing these calls for future research are those of van Wijk et al. (2008) who from an extensive review of the literature conclude that the effects of headquarters on the outcome of transfers has scarcely been covered in the extant literature.

RESEARCH DESIGN

This thesis employs an exploratory multiple-case methodology (Eisenhardt & Graebner, 2007; Miles & Huberman, 1994). An exploratory methodology is particularly suitable for empirical studies of theoretical phenomena that are under-researched, when there is little empirical basis for understanding the phenomenon, and where it is thought that an in-depth study of the phenomenon may yield novel insights. It moreover suits both the complex organizational setting of MNCs, allows the close investigation of both the transfer of capabilities to subunits by headquarters as well as the effectiveness of this transfer with regard to different subunit innovation projects, as well as facilitates the exploratory nature and purpose of the 'why' research question (Edmondson & McManus, 2007; Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Roth & Kostova, 2003). This study answers calls for more exploratory (Foss et al., 2010) as well as case-based (Easterby-Smith et al., 2008) research into the role of headquarters in transfers of capabilities to subunits in presenting an exclusive chance to uncover novel influences on transfer effectiveness.

Research Setting and Sampling

Headquarters varying success in transferring a common innovation capability across the MNCs diverse R&D sites makes Volvo Construction Equipment, a large MNC with over 20 000 employees and globally dispersed R&D operations, an excellent laboratory for identifying novel influences on transfer effectiveness. In this study, 18 innovation projects, based at six R&D sites, were sampled to be as similar as possible in order to allow direct comparison (Eisenhardt, 1989). As the focus of this study was to elucidate determinants of variation in transfer effectiveness of a capability across innovation projects, we use polar sampling (Eisenhardt & Graebner, 2007), i.e., sampling equal numbers of high- and low- effectiveness cases, to more clearly observe contrasting patterns in the data. The innovation projects featured in this study are briefly presented in Table 1.

Data Collection

The data of the study comprises 100 interviews, on average 55 minutes long. Interviews with representatives from headquarters were sampled by referrals (Miles & Huberman, 1994) to

ensure interviewing the executives most closely involved with the transfer and were structured with the aim of understanding how headquarters worked and was organized for transferring capabilities. The interviews with members of the 18 innovation project teams were focused on influences to the effectiveness of the transfer. All interviews were performed in a systematic manner, following the same semi-structured interview guide. This data was supplemented with company documentation on the projects, the innovation capability, and the transfer process.

Data Analysis

The aim of the data analysis was to use case descriptions to extend theory by identifying common concepts through coding, logically explain their causal connections to transfer effectiveness, and state these causalities in the form of propositions. In starting the analysis, I first made an open coding of the interview data, case by case, in seeking to establish first-order themes (Miles & Huberman, 1994). The process of coding these interviews was guided by a focus on factors that seemed to influence transfer effectiveness. In doing so I relied on the interviewees own experience of the transfer (Eisenhardt, 1989). As a second step, I sought to aggregate these first-order themes into second-order categories (Eisenhardt & Graebner, 2007; Miles & Huberman, 1994). For this purpose, I compared and contrasted my initial coding with concepts found in relevant literature. As a third step in the analysis, the second-order categories were aggregated into main concepts. Having done so, I summarized the transfer experience of each innovation project in a detailed case description (Eisenhardt, 1989; Miles & Huberman, 1994) encompassing both the coded interview data and innovation project specific information. As a final step I performed a cross-case analysis (Eisenhardt, 1989; Miles & Huberman, 1994) comparing and contrasting cases with high and low transfer effectiveness looking for similarities and differences between the two groups that could be connected back to high or low transfer effectiveness. The aim of this final step was to explain transfer effectiveness on the basis of the patterns of factors and influences that were present across all cases.

Quality of Data and Analysis

The validity of the findings was supported by four measures taken during the analysis. First, the data has been derived from original interviews performed by the author, and triangulated within each project, with their innovation network, and/or with subunit level management. Second, interviewing project members from different hierarchical levels who potentially perceive the transfer differently minimizes the risk of impression management and retrospective sense-making (Eisenhardt & Graebner, 2007; Gibbert et al., 2008). Interviewing both innovation project teams and their network also enables triangulation of answers and thereby increases the study's construct validity (Gibbert et al., 2008). Third, the coding has been scrutinized by peer researchers with the methodological experience to evaluate it. Fourth, in each case the findings have also been linked to more than one other stream of research that has found similar relationships (Eisenhardt, 1989). The study was designed, executed and evaluated according to guidelines of rigor in multiple-case studies (Gibbert et al., 2008; Gibbert & Ruigrok, 2010), while within the confines of the built-in weaknesses of the method itself with regard to internal validity, construct validity, external validity, and reliability. Taken together, there is good reason to consider this study and subsequent analysis to be both well designed and well executed.

Table 1. Characteristics of Innovation Projects in this Study

Innovation Project ¹	Project Type ²	Project Cost ³	Project Phase ^{4 5}	Transfer Effectiveness
Changwon I	NPD	Class 2/3	3/7	High
Changwon II	NPD	Class 2/3	3/7	High
Changwon III	NPD	Class 2/3	4/7	High
Shippensburg I	NPD	Class 2/3	4/7	Low
Shippensburg II	NPD	Class 2/3	3/7	Low
Shippensburg III	NPD	Class 2/3	3/7	Low
Konz I	NPD	Class 2/3	4/7	High
Konz II	NPD	Class 2/3	4/7	High
Konz III	NPD	Class 2/3	3/7	High
Eskilstuna I	NPD	Class 3/3	3/7	Low
Eskilstuna II	NPD	Class 3/3	4/7	Low
Eskilstuna III	NPD	Class 3/3	3/7	Low
Belley I	NPD	Class 2/3	4/7	High
Belley II	NPD	Class 2/3	3/7	High
Belley III	NPD	Class 2/3	3/7	High
Hameln I	NPD	Class 2/3	4/7	Low
Hameln II	NPD	Class 2/3	3/7	Low
Hameln III	NPD	Class 2/3	3/7	Low

¹ Anonymized.

² New Product Development.

³ Company classification where 1 is lowest and 3 is highest.

⁴ At the time of this study.

⁵ Company classification where Phase 1 is earliest and 7 is the final phase.

MAIN FINDINGS

By contrasting the transfer situations facing the 18 innovation projects with either high or low transfer effectiveness, this study identifies five novel influences to the effectiveness of HQ-subunit transfer of capabilities.

The first influence identified was the fit between the practical and conceptual requirements of the transferred capability and the corresponding abilities of the receiving project teams. The practical requirements in question concerned the receiving projects' skills, practical know-how, and resources, while the conceptual requirements concerned the projects' understanding of the logic, process and purpose of the transferred capability. A lack of fit between what was required and the corresponding abilities of the receiving project teams caused difficulties in both performing and coordinating the different activities required to implement the new capability and thereby negatively affected transfer effectiveness. Interestingly, this factor was found not to be restricted to the practical and conceptual abilities of the receiving project team, but also concerned those of the internal and external innovation networks that supported the projects in implementing the new capability.

The second factor was specific to these internal and external innovation networks' ability to support the receiving projects in implementing the new capability. More specifically, the capacity, in terms of the scale and scope of their functions, and the ability to coordinate the functions of the supporting networks due to their geographical and MNC-external dispersion, was identified as causing problems in the implementation of the new capability, thereby negatively influencing transfer effectiveness.

The third factor found to critically influence transfer effectiveness was the fit between the new capability and the requirements of the innovations of the receiving projects. More specifically, a number of operational requirements, related to technology, and commercial requirements, related to the innovations' markets, were found to influence effectiveness in the transfer of the new capability. In cases where the new capability was found to have a low fit with the recipient projects' innovation with regard to its operational or commercial viability, transfer effectiveness was negatively influenced.

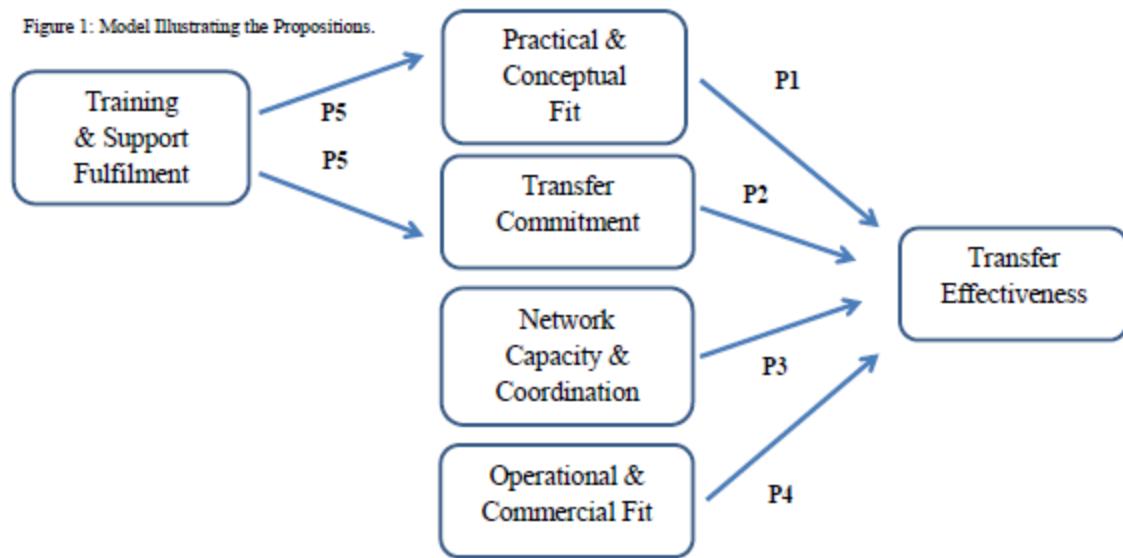
Fourth, the findings of this study furthermore identify how the active involvement of headquarters, in terms of providing transfer training and support that fulfilled the corresponding needs in the projects, was seen as critically important by both headquarters and the receiving projects. However, the provision of training and support that fulfilled the needs of the receiving project teams was also found to be more challenging than previously assumed. The innovation projects in this study that had received training and support that did not fulfil their needs for training and support all experienced low transfer effectiveness.

The fifth and final factor that was found to influence the effectiveness of headquarters-subunit transfer of capabilities was the commitment of the recipient project teams. This commitment, however, was not concerned with the capability being transferred, as emphasized in received literature. On the contrary, the new capability was well received across all projects. Instead, the innovation projects that suffered from low transfer effectiveness expressed concern about the process by which the new capability was transferred. This is particularly interesting as it suggests that the transfer process essentially influenced its own effectiveness in this respect.

In the thesis, these findings are extensively analyzed and explicitly linked to received literature through 'reverse operationalization'. Here, I focus on presenting the contribution of these finding in light of research on effectiveness in headquarters-subunit transfer of capabilities in MNCs.

The findings and their influence on transfer effectiveness are summarized in the model below.

Figure 1: Model Illustrating the Propositions.



The model illustrates the indirect (P5), and direct (P1–P4) relationships that have been indicated as influencing transfer effectiveness. This is the outcome of the empirical study and thus only relationships that emerged from the data are included.

THEORETICAL CONTRIBUTIONS

The findings just described make a number of important contributions to research on effectiveness in headquarters-subunit transfers of capabilities. The model as a whole has two main implications for theory that will be presented below.

The Role of HQ as a Sender

The first implication of the model concerns the sender role of headquarters as active, rather than passive as described in the extant research (Jensen & Szulanski, 2007; Kostova & Roth, 2002; Li & Hsieh, 2009; Minbaeva, 2007). This finding expands considerably on the role of the sender in headquarters-subunit transfers of capabilities by identifying the indirect, via practical and conceptual fit (P1) and transfer commitment (P2), influence that the role of headquarters training and support fulfilment (P5) has on transfer effectiveness.

The findings of this thesis point to a considerably more consequential role of headquarters in managing the transfer of capabilities to subunits than has previously been suggested. It does so by identifying how headquarters role in facilitating the transfer is not so much a question of providing generic training and support (Minbaeva et al., 2003) as of addressing the specific challenges facing individual subunits. This, in turn, is found both to be demanded of the recipient units and particularly difficult for headquarters to accomplish due to the variation in subunit ability to adopt. The challenge of providing tailored training and support is argued to be especially complicated as it essentially requires headquarters to forecast these individual subunit challenges. This finding is furthermore connected to the discussion of how the sender may affect transfer effectiveness and presents an alternative view to the current discussion on disseminative capacity (Minbaeva, 2007). It moreover expands our understanding of the influences to effectiveness in headquarters-subunit capability transfers by highlighting how the actions of the sender may affect the ability of the recipient, and subsequently transfer effectiveness.

Moreover, and although attention has previously been given to the influence of commitment on headquarters-subunit transfers of capabilities (Li & Hsieh, 2009; Minbaeva, 2007), studies have not previously considered the active role of headquarters as affecting recipient commitment through its efforts to manage transfers. **This study therefore expands on earlier findings on recipient commitment by indicating that this kind of commitment may differ from the general motivation discussed by Minbaeva (2007), or Li and Hsieh (2009). Instead this study suggests a commitment that is transfer specific and caused by the recipients' motivational disposition towards the management of the transfer process itself.** In doing so the study sheds light on how the difficulties facing headquarters in providing training and support that fulfils the needs of subunits may themselves influence subunit commitment in transfers. This study thereby answers the call of Michailova and Mustaffa (2012) to address the inconclusive findings of this research by investigating not only the subunit level in the search for influences on commitment.

The challenges discussed above indicate the potential for further problematizing the active role of headquarters in managing transfer of capabilities to subunits to an extent that is currently absent in the literature. It more specifically suggests that headquarters may not only enjoy advantages derived from its hierarchical position, but also suffer

disadvantages stemming from this position. Such disadvantages may, for example, result from headquarters not being part of, and thereby sometimes less familiar with, the local operational environment of subunits. This perspective would find support from challenges identified in research on headquarters involvement in intra-MNC capability transfers between subunits (Ciabuschi et al., 2011; Yamin et al., 2011) that suggest that headquarters can face a knowledge disadvantage in such situations.

This thesis **contributes to research on headquarters-subunit transfer of capabilities in MNCs by highlighting headquarters transfer management efforts. In doing so, it casts headquarters as not a passive and equal, but as an active and authoritative, sender. More specifically, this thesis elucidates the transfer management of headquarters as well as the sometimes unforeseen effects it can have on the receiving subunits.** In doing so, this **thesis** argues that understanding the role of headquarters in managing capability transfers in MNCs requires taking into account the special conditions that apply to transfer processes where the sender is both highly motivated and a unit of great authority and influence within the corporation.

What is furthermore interesting about these findings is that not only do the challenges facing headquarters in fulfilling training and support needs sometimes make it unable to help projects to adopt the new capability as it intended – it actually makes it harder for projects to adopt the new capability by negatively affecting commitment. This furthermore indicates that headquarters-subunit capability transfers may be different from transfers between subunits in terms of how recipient subunits have expectations on headquarters that in turn may influence the effectiveness of the transfer.

What Constitutes ‘the receiver’

The second implication of the model concerns that what constitutes ‘the receiver’ in transfers can be understood as a system comprising networks as well as particular operational contexts, rather than merely as a dyad consisting of sending and receiving units. Although an initial reference to the wider context of transfers have previously been made by Kostova and Roth (2002) in term of the recipients’ institutional context, this thesis adds important new context-based influences in terms of recipients’ supporting innovation networks (P3) and operational contexts (P4) to this theme in the literature on effectiveness in headquarters-subunit transfers of capabilities.

Research on effectiveness in headquarters-subunit transfers of capabilities has traditionally been almost exclusively focused on the dyad of sender and receiver (e.g., Jensen & Szulanski, 2007; Li & Hsieh, 2009; Minbaeva, 2007). This is an intuitive focus, considering how the phenomenon is characterized as comprising one sending and one receiving unit. However, although research has suggested the need to capture the influence of the context of transfers, this has often referred to the wider environment in which the transfer occurs rather than to issues relating to the dyad of sender and receiver (Kostova & Roth, 2002; Schleimer et al. 2014).

This thesis introduces two factors that have not previously been discussed in research on effectiveness in headquarters-subunit transfers of capabilities; (1) **network capacity and coordination and (2) operational and commercial fit.** The identification of these factors widens the influences on effectiveness in this setting from having predominantly focused on the characteristics of the sender, receiver, their relationship and the knowledge content of the capability to also encompass the influence of different dimensions of the recipient unit context.

The findings of this study thereby suggest that it may be necessary to question the common tendency in research on effectiveness in headquarters-subunit transfers of capabilities to focus on the sender-receiver dyad. More specifically, they indicate that the supporting networks and operations of the receiving subunit can pose challenges to the transfer in and of themselves. This moreover implies that influences on effectiveness may not merely emanate from the MNC-internal business activities of subunits – but also from the outside of the formal organization of the MNC.

Taken together, these findings suggest that an alternative perspective on effectiveness in headquarters-subunit transfers of capabilities may view a transfer not as the isolated transfer of a general capability in a sender–receiver dyad, but as the transfer of a specific capability between a sender and a recipient ‘system’ whose boundaries may vary, whose parts and firms may change and affect each other, and whose entirety may be affected by the new capability in different ways. In such a recipient system, different capabilities would face different challenges to effectiveness, as determined by how they interface with the different recipient networks and operations. This perspective therefore provides a framework for thinking about effectiveness in headquarters-subunit transfers of capabilities as taking place in a system rather than a dyad. This has not previously been discussed as influencing the effectiveness of headquarters-subunit transfer of capabilities (Jensen & Szulanski, 2007; Kostova & Roth, 2002; Li & Hsieh, 2009; Minbaeva, 2007) and opens up for interesting avenues for future research.

MANAGERIAL IMPLICATIONS

By shedding light on what causes the effectiveness of headquarters-subunit transfer of capabilities to vary, the findings of this study provide a number of important managerial implications.

The managerial implications of the finding of practical and conceptual fit can be seen as requiring headquarters to evaluate the ability of the receiving projects, as well as that of potential networks, to handle both the practical and conceptual requirements of the new capability before launching the transfer. Pre-empting these kinds of challenges will make transfers initially more costly as both the planning and the execution of the transfer becomes more complicated. This may, however, be the real cost of the transfer as well as possibly lower than the costs of fixing these problems once the transfer has begun.

The challenges of network capacity and coordination make the management of headquarters-subunits transfer of capabilities wider in scope than in cases where the transfer is confined to a strict sender-receiver dyad. The prospect of projects relying on internal and external networks blurs the boundaries of capability transfers. This makes the role of headquarters more complex as it requires taking the extent to which the supporting networks are involved with the capability, and whether they provide the capacity and the ability for coordination needed to handle the requirements of this involvement, into account at an early stage.

The findings of operational and commercial fit are important in the sense that they explicate the potential problems arising from heterogeneity in the firm’s product portfolio and markets. The managerial consequences of this finding are seen as necessitating the assessment by headquarters at an early stage, and in depth, of how both the operational and commercial aspects of the receiving project’s innovation may be affected by the new capability.

The difficulty of accurately assessing the need for transfer training and support in the receiving projects can be seen as requiring headquarters to predict what challenges projects and their supporting networks are likely to face in the transfers and to take measures to help them overcome these challenges. This, in turn, will need the involvement of key people who are knowledgeable about both the general capability being transferred and the specific organizational context it is transferred to. This role of headquarters in managing the transfer is found critically important to transfer effectiveness also in terms of influencing recipient commitment.

In sum, the managerial implications of the findings of this study revolve around the increased necessity of headquarters to become able to foresee what the main challenges to the transfer are likely to be. This, in turn, involves how these challenges can be expected to affect the receiving project, their supporting functions, the innovations it is working on and what headquarters can do to facilitate the transfer with regard to training and support, well aware that the credibility of the transfer, and thereby the commitment of the organization, may hinge on how this is conducted and perceived.

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Sustainability Marketing as an Antecedent of Business Performance

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1. Introduction

The integration of sustainable development concept into the theory and practice of marketing arises from the contemporary business imperative to generate “the triple bottom line” objectives: economic, social and environmental. The structure of values and commitment of market oriented entities in the end serves as fundamental competence for ethical, social and ecological prosperity. Because marketing practice is built on the concept of relationships of trust and commitment, it is necessary to investigate if such radical approach ultimately leads to better business performance; portraying the main goal of this thesis. A broadly used term “sustainability” was born in the UN’s Brundtland Report “Our common future” (1987) and stands for “the development that meets the needs of current generations without compromising the ability of future generations to meet their own needs”. Nowadays, corporate sustainable development is widely researched topic ensuring environmental integrity, social equity and economic prosperity; It is considerate to be a multidimensional construct, which refers to the adoption of social, economic, and environmental development in operations (Baumgartner and Ebner, 2010; Chow and Chen; 2012).

Marketing system for sustainable society has to be developed by radical reformulation of basic marketing principles and politics. Due to many critiques pointed at current marketing practice, sustainability marketing should be perceived not as threat but rather as an opportunity of many promises. The aim of this thesis is to comprehend and investigate the sustainability marketing orientation as well as its positive effect on the business performance.

2. Literature review

The concept of sustainable development in marketing theory and practice does not suggest orientation towards creating the desired and defendable comparative advantage (Obermiller et al., 2008) because among other things it is an approach that is long-term oriented and the lack of it can cause irreparable damage. It presupposes a radical reformulation in which the theoretical basis partially blurred especially overlapped term “sustainable green”, “sustainable” or “sustainability” of marketing.

Published research on sustainability marketing through its domain is predominantly theoretical, mainly in terms of the review of the marketing function and its strategic orientation. Hunt (2011) has approached the development of sustainability marketing

from a macromarketing perspective of a sustainable enterprise and theory of resource advantage, similar to the Connelly and others (2011) who explained the concept through the variety of selected organizational theories. Hult (2011) has further stressed the importance of stakeholder engagement in strategy design and pointed out that marketing has a critical position not only in terms of customer relationship management but also with a wider range of market problems. The main theoretical foundation of this research are the models of sustainable marketing orientation and market-oriented sustainability (Mitchell et al., 2010; Crittendenn et al., 2011) that arises from basic corporate ideology, social inclusion and dynamic capabilities which competitive advantage is achieved.

Polonsky (2011) points towards the disparities in theory and practice in the field of transformational view on sustainability marketing; the core of the conflict is within the conflicting interest of individuals and the benefits of environment and society. The growing interest in linking sustainability marketing with various applied strategic concepts is proven by already three relevant overviews of published literature (Killbourne and Bekmann, 1998, Leonidou and Leonidou, 2011; McDonagh and Prothero, 2014).

Sustainability marketing strategy was empirically studied by:

- Karna and others (2003) are pioneers in bringing together environmental and social dimension within the marketing function.
- Lindgreen and others (2009) explored the perception of high-tech medical devices products buyers' in context of social and environmental dimensions of sustainability. The results have shown that sustainability relevance was secondary, after cost, functionality and the use of the product.
- Beltz and Schmidt-Riediger (2010) investigated characteristics and motives of sustainability marketing strategy in the food industry and identified four different types of companies with respect of the level of implementation: leaders, followers, indecisive and passive.
- Gallego-Alvarez and others (2010) investigated CSR practices related to marketing and their relationship to value creation.

Connely and others (2011) have provided a solid foundation for future marketing research offering application of sustainability through selected organizational theories, among which the Resource-based view was selected as the theoretical starting point. Hart (1995) was a pioneer in resource-based view of the firm application to the environmental social responsibility – being the unique capability leading to competitive advantage. Resource-advantage theory, inspired by the stakeholder theory presents a proactive strategic approach in creating a competitive advantage based on specific resources and competences (Barthel and Ivanaj, 2007). Varadarajan (2010) proposes that the domain of strategic marketing is focused on the organizational behaviour and its interaction with the environment and managements responsibilities arising from the marketing department's role in the organization.

“Marketing resources refer to all types of resources expanded by an organization toward the creation, communication and delivery of products that offer value to customers in transactional and relational exchanges with the organization” (Varadarajan, 2010).

There have been numerous studies in environmental marketing that have proven the link of such orientation creating competitive advantage:

- Environmental management tends to lead to competitive advantage in terms of costs and differentiation if implemented with proactivity (Gonzalez-Benito and Gonzalez-Benito, 2006; Fraj-Andres et. al, 2008)
- Proactive environmental management leads to development of capabilities that ensure unique competitive advantage. (Lopez-Gamero, Molina-Azorin and Claver-Cortes, 2009)

2.1. Sustainability Marketing Orientation – The construct

According to Kohli and Jaworski (1990) market orientation stands for the organization culture that effectively and efficiently procures behaviours necessary for the creation of superior value therefore business performance. Societal orientation represents an obligation of the company to act in favour of the consumer's long-term well-being as well as the whole society (Kang and James, 2007).

According to Hult (2011) market oriented sustainability comes down to building and managing relationship with diverse set of stakeholders, where consumers stand out as the most important group; the author also stresses that rising share of companies recognize the value of looking at the business strategy from a broader perspective which favours integration of sustainability in the organization's culture (norms and beliefs). Theoretically modelled sustainability market orientation according to Mitchel and others (2010) represents the combination of environmental, social and economic orientation, which should integrate macromarketing systems approach to marketing management; it should reinforce credibility and legitimacy with all involved stakeholders and marketing management should recognize sustainability management principles.

Following the notion of "*How marketing job is done ultimately leads to what marketing job is done*" Crittenden and others (2011) developed the concept of Market-oriented sustainability that presents "The Why behind the socially responsible practices", theoretically developing underlying triggers that precipitate sustainable actions and result in a competitive advantage for the firm. Using R-A theory they have proposed an underling foundation of the integration of sustainable development into market orientation. The model of three constructs – DNA, Stakeholder involvement and performance management portrays the most thrall theoretical and normative proposition on strategic sustainability integration.

A company's strategic tendency towards sustainability is a result of its DNA (also referred to as culture and climate) a construct referring to the actual implementation of sustainability including three facets core ideology, dynamic capabilities and societal engagement.

Core Ideology consists of strategic embeddedness of sustainability into the marketing department in the form of mission, values, operations, norms, culture etc. In order to enhance sustainability, a major challenge for managers is the degree of integration of sustainability principles (objectives, vision, mission) in the overall firm strategy as organizations tend to see sustainability as a separate strategic issue (Etzion, 2007)

Dynamic Capabilities refer to the sustainability dimension in the marketing action patterns related to for example product development process, supply chain management, in communication etc. More specifically, according to Vorhies and Morgan (2005) marketing capabilities include the product development, pricing, marketing communications, selling and market information management capabilities.

The dimension of climate denotes the societal engagement of marketing department, hence the proactive development of strategies that benefit stakeholders and the organization. It requires the awareness of societal issues and opportunities that create societal benefits as organizational resources. Schrettle and others (2014) while discussing the drivers of sustainability in manufacturing industries divide them into exogenous (environmental regulation, societal values and norms and market drivers) and endogenous (culture, strategy, resources). Strategy represents true the integration of sustainability principles into the firm strategy. Culture refers to influences such as motivation, information dissemination, management commitment and longer-term horizon whereas resources refer to Resource-based view of the fir as ecological strategies and innovation tend to lead to competitive advantage.

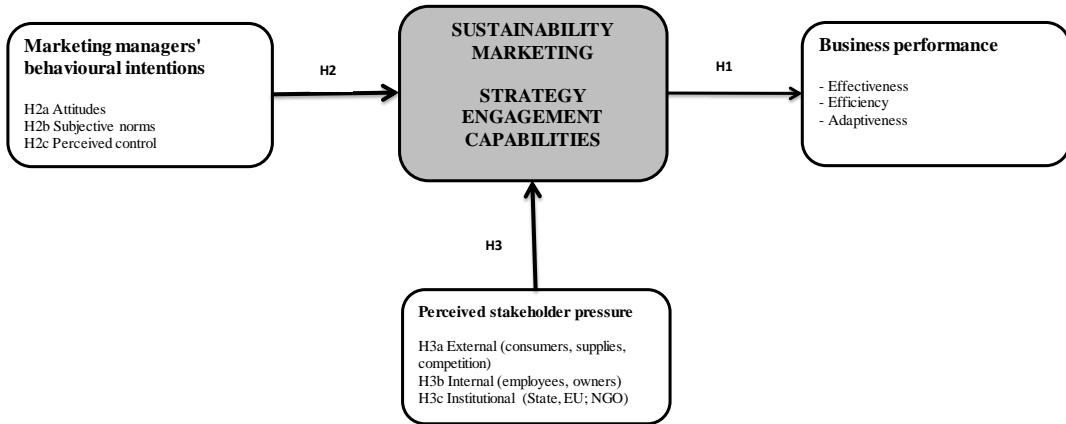
3. The structural model of the sustainability marketing influence on the business performance

Following the future research recommendations for (Crane, 2000; Menon and Menon, 1997; Leonidou and Leonidou, 2011) and obvious non-existence of validated measure of sustainability oriented marketing this thesis identifies, tests and validates a measurement scale for sustainability oriented marketing. Furthermore, the structural model of the influence of sustainability marketing on the business performance was developed. Apart from the formative variable of sustainability marketing the model identifies the importance of the impact of attitudes and subjective norms and perceived control (as devised by the Theory of Planned behaviour) of marketing managers in the area of sustainability marketing practical implications. Manager's attitudes and intentions are considered to be the key factor in the implementation of responsible activities (Banerjee et al., 2003).

Stakeholder interests and pressures, without any doubt, are relevant and major contributor to the marketing strategy and operations (Maignan and Ferrell, 2004; Kirchoff et al., 2011; Leonidou i Leonidou, 2011) measured by the perceived pressure from the perspective of marketing managers (Rivera-Camino, 2007).

In accordance with all of the mentioned references the model of four dominant variables was constructed as seen in the Figure 1, namely: Sustainability Marketing, the attitudes and intentions of the managers, the perceived pressure of stakeholders and the business performance.

Figure 1. Structural model – The impact of Sustainability Marketing on the business performance



Such modelling has led to the formation of following hypothesis:

H1. The implementation of sustainability marketing positively influences business performance.

H2. The intentions of manager's behaviour have an impact on the level of sustainability marketing.

H2a. Managers' attitudes towards sustainability marketing positively influence the sustainability marketing.

H2b. Managers' subjective norms positively influence the sustainability marketing.

H2c. Perceived behavioral control positively influences the sustainability marketing.

H3 Perceived stakeholders' pressure has an impact on the level of sustainability marketing implementation.

H3a. Perceived pressure of internal stakeholders has positive impact on the level of implementation of the strategy of sustainable marketing.

H3b. Perceived pressure of external stakeholders has positive impact on the level of implementation of the strategy of sustainable marketing.

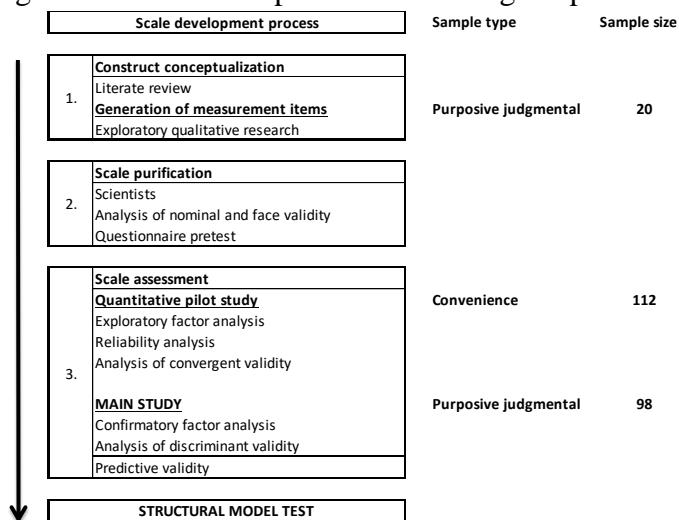
H3c. Perceived pressure of institutional stakeholders has positive impact on the level of implementation of the strategy of sustainable marketing.

4. Methodology

As Churchill (1979: p. 64) pointed out "...a critical element in the evolution of a fundamental body of knowledge in marketing, as well as for improved marketing practice, is the development of better measures of the variables with which marketers work." In line with recommendations in the published literature we designed a mixed method, thrall and rigorous scale development process for sustainability marketing focused on pretest, validity and reliability of new construct measurement (De Velis,

2003). Almost identical process of scale development was found in the relevant papers (Cadogan et al, 1999; Sin et al., 2005).

Figure 2. Scale development methodological process



As a result of literature review Sustainability marketing orientation is modelled as multidimensional construct consisting of three elements: Strategy, Engagement and Capabilities. In order to generate relevant pool of items we have reviewed related literature and conducted an extensive qualitative research. Exploratory qualitative research was done on the sample of 20 experts of whom 18 were marketing managers, one was the director of the professional association for sustainable development and one was from the academic community. Respondents were selected according to their expertise and experience in the field of sustainability and responsible business practices in Marketing and related market activities. The interviews were conducted by one of the authors personally in the period from November 2013 to February 2014 in Croatia and they were recorded, unless the respondent specifically requested otherwise. The open-end questions asked were derived from pre-made reminder for in-depth interviews. There was given special attention to the selection of experts in order to achieve diversity of industries, company sizes and the types of market.

Five professors specializing in the field and served as judges to evaluate the content validity of the items by allocating them to the right element of sustainability marketing orientation. All of the items, which were not properly or consistently assigned, were eliminated; the process resulted in the total of 30 statements that entered further stages of the process.

We developed, a pilot study questionnaire based on mentioned items together with questions regarding business performance (comprising of effectiveness, efficiency and adaptability) with the scale developed by Krohmer, Homburg and Workman (2002). All

of the items were measured with a 7 point Likert scale. In order to ensure clarity and avoid ambiguity the questionnaire was pretested with 20 MBA students at the Faculty of Economics and Business in Zagreb.

Pilot study was conducted on the sample of MBA and Executive MBA students in the region (Croatia, Slovenia and Serbia) noting that convenience sample of students (in this case professionals) is adequate for research because of its exploratory nature and the items tests are known and relevant to the respondents (Ferber, 1977); noting that this type of sample was used in this stage in methodologically similar studies (Sin et al., 2005). The online questionnaire after two rounds of reminders produced 212 questionnaires out of 112 were complete and valid for further assessment.

We have conducted exploratory factor analysis in order to determine dimensionality of scale on the appropriate size sample (Hair et al., 2010: p. 102). Tests have confirmed the sample's adequacy for EFA (KMO 0,8; Bartheltt's test of spehrcity sig. 0,000). In the process of EFA we have excluded all of the variables which: had a factor loading 1 less than 0,5 (Hair et al., 2010), Factor loading more than 0,3 on more than one factor, communality less than 0,4 and the ones that have loaded the "wrong" factor. (Hair et al., 2010). The process resulted with the 15 deleted items. The EFA extracted three factors that were initially, theoretically proposed: STRATEGY, Societal ENGAGEMENT and Dynamic CAPABILITIES, thereby proving the premise that sustainability marketing is a multidimensional construct. Such findings is in accordance with published theoretical contribution in the field of sustainability marketing orientation (Mitchel et al, 2010; Crittenden et al., 2011) as well as in line with methodological guidelines of scale development process in similar field of eco-marketing (Banerjee, 2001).

After completing the pilot phase, the main study was implemented with the questionnaire that was comprised of 4 sections matching the variables in the model tested on the Likert 7 point scale. Used measures were adjusted from the previously published works of Ajzen (1991) and Ferdous (2010) for the Theory of Planned Behaviour and Belz and Schmidt-Riediger (2010), Gonzalez-Benito and Gonzalez-Benito (2006) and Rivera-Camino (2007) for perceived stakeholder pressure.

Main study was conducted by the means of structured online questionnaire on the sample of marketing managers of 1500 most successful Croatian companies (published by FINA - Croatian Financial agency).

It is important to note that there were several companies present on the list that in its organizational nature do not have a traditional marketing function (e.g. specific types of utility companies) therefore we have paid special attention not to send survey to them. The research was conducted in from June 2014 to September 2014 sending 2 rounds of e-mail reminders, further enhanced with telephone reminders. The final sample of fully answered surveys includes 98 questionnaires that entered the following stage of psychometric properties assessment.

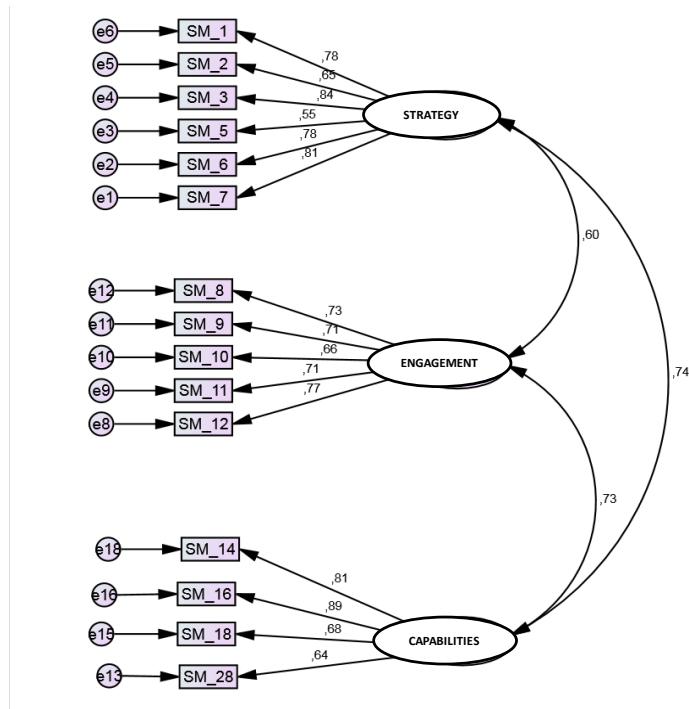
Table 1. Characteristics of organizations in the main sample

		Frequency	Percent
Business type	B2B	51	52%
	B2C	47	48%
Product type	Products	51	52%
	Services	47	48%
Firm size	Small	20	20%
	Medium	28	29%
	Large	50	51%
Ownership	State owned	10	10%
	Privately owned	42	43%
	Foreign owned	46	47%

We have conducted confirmatory factor analysis using AMOS 21 in order to test internal structure validity using maximum-likelihood procedure.

There is not clear consensus on the selection of model adequacy indicators in confirmatory analysis that are in published literature even contradictory following the findings in similar research we have selected following indicators: chi-square goodness-of-fit, comparative fit index (CFI), non-comparative fit index (NFI), Tucker-Lewis index (TLI) and the Root Mean Square Standardized Error of Approximation (RMSEA). We have also evaluated measurement items relative to their contribution to significant residual covariation and cross-loading in order to ensure the “uniqueness” of each factor’s representation of sustainability marketing orientation. As a result we eliminated three items, leaving us with the total of 15 items; 6 for Strategy, 5 for Engagement and 4 for Capabilities.

Figure 3. Results of Confirmatory factor analysis



In order to investigate the dimensionality of the construct we have tested three different models in terms of selected fit indices: Model 1 represents 3 correlated factors with all of the items from the pilot research, Model 2 refers to a one-factor model where Sustainability marketing orientation is hypothesized as a uni-dimensional construct and Model 3 denotes a model of three correlated factors without the three items.

Table 2. CFA - Model adequacy results

Criteria		Model 1 3 correlated factors	Model 2 One factor	Model 3 3 correlated factors (w/o 3 items)
χ^2		223,499	354,388	97,038
d.f.		132,000	119	87
p	P<0,05	0,000	0,000	0,217
CFI	>0,9	0,906	0,747	0,986
TLI	>0,9	0,891	0,711	0,983
RMSEA	<0,10	0,085	0,143	0,034

According to all selected indices it can be concluded that Model 3 has a good fit, and the best one among the three. Furthermore, we conducted construct reliability analysis where Chronbach Alphas were greater than the threshold of 0,7. Also, all standardized regression weights are larger than 0,5 that is considered a limit in exploratory research

(Hair et al., 2010: p. 722) and all statistically significant thereby ensuring construct reliability, also Item-to total correlations indicate homogeneity.

Construct validity is proven by convergent, discriminant and nomolgical validity. Convergent validity presumes that extracted variance should exceed 0,5 for each factor what is satisfied with the results of the confirmatory analysis, vivid in the Table 3.

Table 3. Convergent and discriminant validity

	STR	ENG	CAP
Average Variance Extracted (AVE)	55,25%	51,34%	58,12%
Composite Reliability	0,88	0,84	0,81
Interconstruct Correlations	STR	ENG	CAP
STR	1,00		
ENG	0,70	1,00	
CAP	0,42	0,34	1,00
Correlations Squared	STR	ENG	CAP
STR	0,55		
ENG	0,49	0,51	
CAP	0,18	0,12	0,58

Discriminant validity is satisfied as squared correlations between factors are smaller which the model proved. Predictive validity represents the ability of the scale to behave as expected with respect to some other constructs to which it is related (Churchill, 1995). As discussed in the literature review sustainability marketing orientation leads to relevant capabilities therefore ensuring competitive advantage, hence superior business performance.

4. Results and discussion

The devised model was tested with the multivariate PLS-SEM method that is adequate for exploratory nature of the research in the case of small number of obesrvations (Henseler et al. 2009). The model is composed of one formative factor and 7 reflective, where each was measured by at least 3 items on the adequate sample size. Model was successfully tested for reliability and validity of constructs. As for the model adequacy, coefficient of determination was set at 0,6 for Sustainability Marketing communicating very high levels of determination and 0,13 for Business performance witnessing low, but valid modelling. It is possible to explain that business performance, indeed, entails many other contributors than just sustainability marketing orientation that is theoretically and practically expected. All of the other model coefficients are pointing towards model adequacy (f^2 , Stone-Geisser test).

Table 4. PLS-SEM Model results - Hypothesis testing

Hypothesis	Direction of relation	Standardize estimate (beta coefficient)	Standard error	t value	p value	Result
H1	Sustainability marketing -> Performance	0,356	0,096	3,723	0,000**	YES
** p<0,001						
Hypothesis	Direction of relation	Standardize estimate (beta coefficient)	Standard error	t value	p value	Result
H2						PARTIALY
H2a	Attitudes -> Sustainability marketing	-0,146	0,088	1,666	0,096 NS	NO
H2b	Subjective norms -> Sustainability marketing	0,387	0,108	3,567	0,000**	YES
H2c	Behavioral control -> Sustainability marketing	0,348	0,081	4,283	0,000**	YES
** p<0,001						
Hypothesis	Direction of relation	Standardize estimate (beta coefficient)	Standard error	t value	p value	Result
H3						PARTIALY
H3a	Internal stakeholders -> Sustainability marketing	0,012	0,097	0,127	0,899	PARTIALY
H3b	External stakeholders -> Sustainability marketing	0,248	0,079	3,159	0,002**	YES
H3c	Institutional stakeholders -> Sustainability marketing	0,166	0,086	1,925	0,055*	YES
** p<0,005; * p<0,1						

Analysing the results obtained from the PLS-SEM structural model run it is possible to conclude that the sustainability marketing has a statistically significant impact on business performance. In spite of relatively lower levels of determination the conclusion has very significant implication for the current marketing theory and practice. The second hypothesis is derived from the concept of theory of planned behaviour therefore having three sub-hypotheses, among which two were confirmed. Such notions point towards the importance of perceived behavioural control and subjective norms in the process of intentions formation which then influence the sustainability marketing oriented

managerial behaviour. The third hypothesis stems from the idea that interests of various stakeholders have relevant influence on the creation of responsible formulation of marketing orientation. Perceived pressure of external and institutional stakeholders' actions and decisions have important implications to sustainability oriented marketing practice.

The statistical analysis of the model has led to the conclusion that responsible decisions and marketing practice positively influence the customer satisfaction that later on transfers into the more favourable business results. Since similar research in environmental marketing is not unambiguous (Fraj-Andres, 2009– Crane, 2000,) this finding presents a clear direction for further development in the field of sustainability marketing.

Statistically significant impact of subjective norms and behavioural control is consistent with similar studies (Ferdous 2010); it clearly suggests that managers' perception of responsibility with greater degree of control positively impacts the sustainability marketing. Results imply that the responsibility should not be a sole tool of economic imperatives but also the way of personal empowerment and the development of individual contribution.

5. Conclusion and limitations

Sustainability marketing is not merely a marketing strategy aimed at the creation of competitive advantage, but rather a radical reformulation of existing marketing practice in the direction of increased ethics and morality. The importance of this thesis is primarily reflected in the combination of a systematic review of related literature, methodological contribution of scale development and the use of several different research methods in order to obtain a comprehensive understanding of the implementation and the prominence of sustainability marketing. All of the proposed goals have been reached. Above all it has been statistically proven that marketing that has a broader, more responsible that contributes to the business success; it is therefore inferred that in spite the short-term large cost of sustainability ethical and responsible choices lead to better business results, therefore are economically viable. The implications can serve marketing managers as a foundation in devising a plan to orient their department towards sustainable business functioning. Moreover, the construct can be used to evaluate existing initiatives and improvements when satisfying the interests and expectations of the involved parties. The economic dimension of “the triple bottom line approach” is the prerequisite of any business function, together with the rising pressures from the environment, companies will be more inclined to orient their marketing department towards sustainability if they know that it will provide, directly or indirectly, better business results. Limitations of the exploratory study are present in the sample limitations; in spite of its methodological adequacy the sample of the pilot and the main study is not the same. Due to the very rigorous statistical and methodological procedure of scale development it is possible that too many items have been dismissed. Limitations of the main study are mainly present in the small sample size, single source bias and the mixture of industries and business sizes – it would be plausible to see the results in specific segments.

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Doing Intersectional Identity Work: Social Categories, Inequalities and Silences

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Abstract

In my doctoral dissertation I examine identity work in organisations from a perspective of intersectionality. The focus is in particular on the interface between intersectional inequalities and silences in identity work. I identify different ways people relate to social categories such as ethnicity and gender combining them with but also separating them from their self-identity. Moreover, the thesis discusses how people are and are not silent about social categories at work. The thesis contributes to literatures on intersectionality and identity work in organisations seeing silencing inequalities as a central activity people engage in in intersectional identity work.

Introduction

This thesis is about identities and social categories in organisations, but also about inequalities and silences. It began as a study of identities, but as it progressed I became more and more intrigued by inequalities. From being at the centre of the work, identities instead increasingly became a way to approach people's experiences of inequalities in organisations. Rather than people's identities as such, I became interested in how identities and identity work in organisations are connected to different and intersecting inequalities.

Moreover, and no less importantly, it is a thesis about silence in identity work. I look at silence as a part of people's identity work in organisations and how it becomes constitutive of who they are. Silence as a topic arose during the research process when I tried to make sense of how people talked and did not talk about social categories, with inequalities becoming an important topic on which people were silent. Thus, the thesis is not only about silence in identity work as such, but more specifically about how inequalities and silences are or can be connected to each other in identity work in organisations.

Identities come into being by working with different and often contradictory categories related to oneself (Adib and Guerrier 2003, Essers and Benschop 2007). Drawing on a notion of identity work as 'people's activities of forming, repairing, maintaining, strengthening or revising the constructions that are productive of a sense of coherence and distinctiveness' (Sveningsson and Alvesson 2003: 1165), the thesis examines how people relate to different and relevant social categories when constructing a sense of self. As such, it participates in the discussion around identity work in organisations in relation

to the variety of discursive resources and/or multiple identities (Alvesson and Willmott 2002, Sveningsson and Alvesson 2003, Watson 2008). More specifically, it looks at identity work in the context of interview talk, examining how people talk and do not talk about themselves in relation to different social categories and in this way construct themselves a self-identity at work.

The study can be seen as being located in what I call *intersectional identity work* in organisations. This refers to a relatively small body of literature combining identity work with intersectionality for studying people's identities and identity construction in organisations (e.g. Adib and Guerrier 2003, Atewologun 2014, Boogaard and Roggeband 2010, Corlett and Mavin 2014, Essers and Benschop 2007). By drawing on a notion of intersectionality as referring to 'the relationship among multiple dimensions and modalities of social relations and subject formations' (McCall 2005:1771), I look at identity work as being done in relation to different and mutually constitutive social categories.

The study focuses specifically on two aspects related to intersectional identity work: inequalities and silence. Inequalities can be considered central for intersectional identity work in organisations both in the sense of how people position themselves in relation to different and intersecting inequalities identity work (Adib and Guerrier 2003, Zanoni and Janssen 2007), and how intersectional identity work itself can reproduce inequalities in organisations (Boogaard and Roggeband 2010). I am primarily interested in inequalities in intersectional identity work in the first sense, as relating to how people do intersectional identity work.

The second aspect is silence in and around intersectional identity work. Silence, in terms of what is being excluded or omitted in people's accounts of themselves, can be seen as central for identity work and the kind of identities people construct themselves (Ward and Winstanley 2003). While silence can mean different things, from more literal understandings of not talking, to more discursive ones of constructing specific knowledge on a topic and, in doing that, excluding others (Harlow et al. 1995), here, silence is seen as a discursive phenomenon related to different ways of excluding potentially relevant understandings on social categories in organisations that might have consequences for people's identities and identity work. Thus, the thesis produces knowledge on how people relate to inequalities in their intersectional identity work, and how people are silent about wider societal social categories in their identity work. The overall focus is on individual level identity work.

The study is based on 33 semi-structured interviews conducted in three small or middle-sized ICT companies in Finland with a fairly heterogeneous group of people in terms of positions in the organisations and occupations, as well as ethnicity, gender, and age. As such each interviewee has a unique position at the intersections of different social categories. Rather than examining one or more specific kinds of intersectionalities, the study focuses on intersectionality as a general process in identity work.

Intersectional approach to identity work

Taking intersectional perspective to identity work in organisations has several consequences for the understanding of it. Firstly, identity work is seen as located between different and mutually constitutive social categories. Thus, what becomes important is what happens at the intersections between the categories (cf. Staunæs 2003): how people are being positioned as specific type of individuals in a specific context and how they position themselves. As such, intersectionality can be seen to conceptually contribute to the understanding of identity work as done in relation to multiple categories.

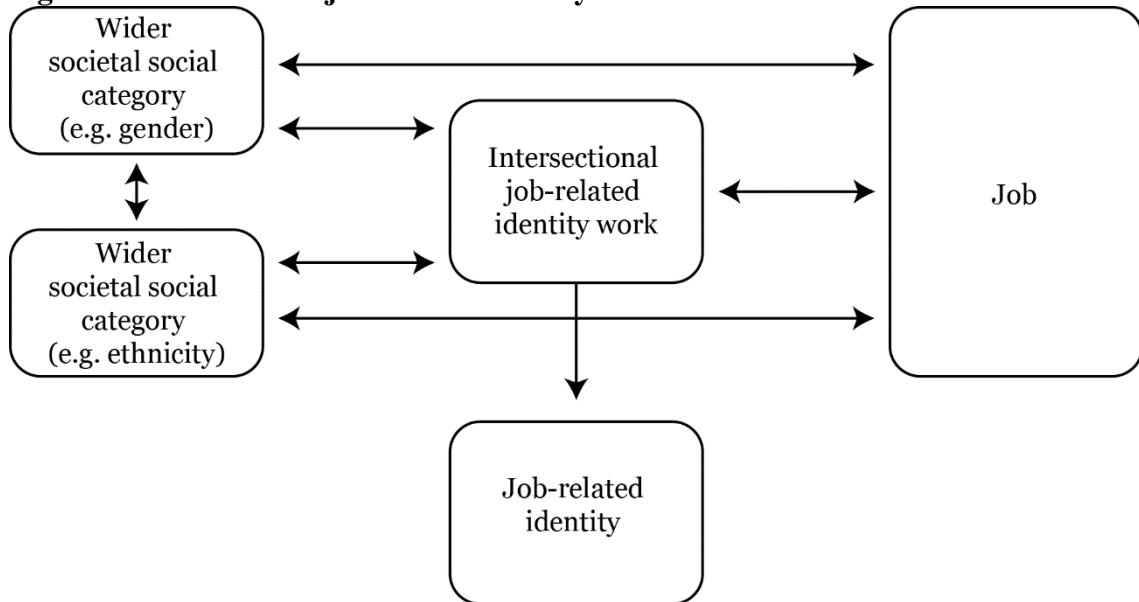
Secondly, intersectionality can be seen as connecting identity work in organisations to the wider societal context, and thereby being a way of responding to critique of identity work as often being examined too locally (Alvesson et al. 2008). Through its interest in wider societal social categories such gender and ethnicity, intersectionality opens up possibilities for the study of and theorizing on people's identity work as a process embedded in and influenced by various intersecting intra- and extra-organisational social categories (cf. Hearn and Louvier 2011). In practice, taking intersectionality as the perspective for identity work in organisations means examining how identity work is done at the intersections of different types of social categories: the more organisational and/or occupational social categories and wider societal social categories.

Thirdly, an intersectional approach to identity work highlights questions around inequalities in identity work. Whereas intersectionality has been often studied at the interface of multiple disadvantages, it can be also applied as a more generalized theory of identity related to both disadvantage and privilege (Nash 2008). This study takes a rather inclusive approach to intersectionality, seeing everybody's identities as intersectional in the sense of their being formed in relation to inequalities around relevant social categories, whether in terms of privilege, disadvantage, or both.

Intersectional job-related identity work

I look at intersectional identity work at the interface between a job and wider societal social categories such as ethnicity and gender. I chose to examine the construction of job-related identities, since the term 'job' can be seen to encompass both occupational and organisational aspects of one's work, translating abstract occupations into specific tasks in a specific organisational context(Acker 1990, 2006). Here, 'job' is used as an umbrella term encompassing the occupation, the position in the organisation, and the concrete work tasks. The concept of 'job' has the double meaning of being both a category intersecting with other categories and the outcome of identity work in the form of a self-identity being constructed (job-related identity). Furthermore, I focus on wider societal social categories since they involve systematic inequalities between different categories of people, often having considerable importance for organising people's lives both within and outside organisations (Prasad et al. 2006).Figure 1 presents what I understand as intersectional job-related identity work.

Figure 1 Intersectional job-related identity work



The relationships between wider societal social categories and a job are mutually constitutive. Whereas jobs influence wider societal social categories, what is important here is how wider societal social categories affect jobs both in the more material sense of how tasks can vary depending on who is doing the job (Acker 2006) and more discursively in terms of the different meanings given to the job (Ashcraft 2005). Intersectional identity work is a mediating term between the different categories (job/wider societal social categories) and a job-related identity. It examines how the different categories are used in relation to each other, what is being done to one category by borrowing, enmeshing and/or keeping separate meanings from other categories (see, e.g., Benschop and Essers 2007). Job-related identity is the outcome of the activities that people engage in to give the category 'job' its particular meanings by using or not using understandings from wider societal social categories relevant and/or available to the specific person in the specific context.

Silence in intersectional identity work

Silence emerged as a topic when analysing the data. In organisation studies silence has been approached from a variety of perspectives. It has often been looked at as an organisational behaviour question, analysing organisational members' silence as a conscious choice of withholding potentially relevant information (e.g. Morrison 2011). Silence has been also examined in poststructuralist writings. For Foucault (1981), discourses consist of various complex and changing elements, including both things that are said and unsaid, silence being an integral part of discourse (Foucault 1981, Ward and Winstanley 2003). Moreover, silence has been examined in relation to a variety of

different social categories, notably gender (e.g. Collinson and Hearn 1994), sexuality (e.g. Ward and Winstanley 2003) and race and racialization (e.g. Bell et al. 2003).

Silence in intersectional identity work refers to excluding or omitting issues related to social categories in the organisation, potentially important for one's identity at work. Thus, silence can be considered to relate to a variety of different phenomena around social categories in organisations becoming more directly or indirectly relevant for who and how one constructs him- or herself to be. For example, if and how social categories are talked about in the organisational context is influenced by different discourses around the topic (e.g. Prasad et al. 2006) and/or by ambiguities around unequal social categories in organisations, meaning that inequalities become simultaneously acknowledged and ignored (Korvajärvi 2011). Furthermore, silence in intersectional identity work can also be seen to relate to who is talking, meaning people's positions of privilege and/or disadvantage, since disadvantage tends to render the category more visible, while privilege tends to have the opposite effect (McIntosh 1988, Pease 2010).

Research design and methodology

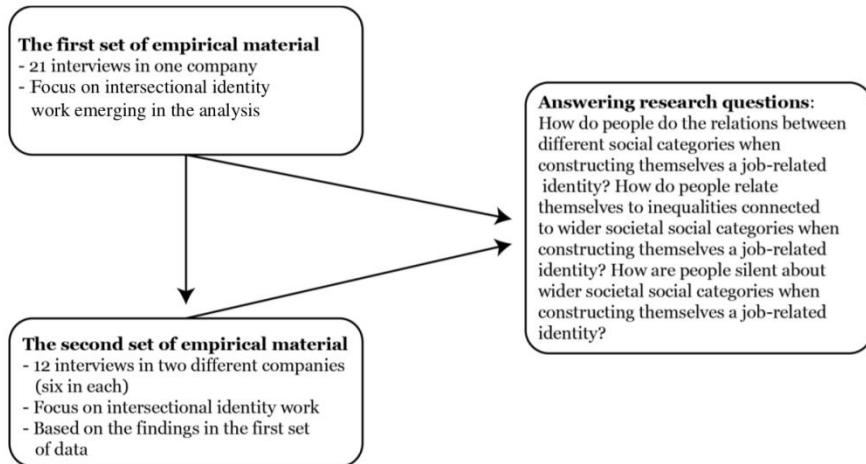
The thesis attempts to provide some answers to three research questions:

1. How do people do the relations⁶ between different social categories when constructing themselves a job-related identity?
 - 1.a. How do people relate themselves to inequalities connected to wider societal social categories when constructing themselves a job-related identity?
 - 1.b. How are people silent about wider societal social categories when constructing themselves a job-related identity?

The research process can be divided into two phases referring to the empirical material gathered and the different roles that the phases can be seen to have in answering the research questions. The first phase consists of the first set of empirical material (21 interviews conducted in one single company) and the different stages of its planning, gathering, and analysing. The role of the first phase in the research design is to provide some initial answers to the research questions through identifying various ways in which people do intersectional job-related identity work. The second phase can be seen as a continuation of the first phase with the aim of further developing the findings of the first phase. I conducted 12 interviews, six in each company with a specific focus on intersectional identity work. Figure 2 summarizes my research design.

⁶By 'doing the relations', I mean the activities that people undertake at the intersections between different social categories (Staunæs 2003). Since the study is based on interview material, 'doing the relations' means here in practice talking or not talking about the social categories in relation to each other.

Figure 2 Research design



The analysis of the first set of data follows what Bilge (2009) calls a ‘two-step hybrid approach’ as a way to study intersectionality without prematurely imposing social categories on the empirical material. It is divided into two different steps: a data-driven inductive approach and a theory-oriented deductive approach. The first step consists of identification, interpretation and coding of emergent themes in the data; thus, it does not *a priori* assume any social categories. In the inductive stage I coded the central themes in the interview material by using Nvivo and wrote summaries of each interview. Intersectionality as a perspective on identity work emerged during the process of analysis. The inductive stage was followed by a deductive stage, meaning a reading of the data through the perspective of intersectional identity work. I identified different ways people made use of social categories and mapped them into what I call intersectional strategies, meaning ways of managing the relations between available social categories.

The analysis of the second set of data was done somewhat differently in comparison to the first set of data. The approach was from the beginning rather deductive, focusing on intersectional identity work. Given the interest in intersectional identity work as a process taking place throughout the interview, each interview was treated as an entity. Thus, instead of coding what was said across the interviews, I chose to write a summary of each interview focusing on: 1) what were the central themes talked about in the interview, meaning, in particular, different social categories and issues related to them; 2) what was not talked about, for example, which potentially central social categories remained undiscussed, and in that sense silenced; 3) how the categories were talked about; and 4) what kind of identities were constructed through the talk. Finally, the findings were examined in relation to the findings from the first set of data.

Analysing silences

The analyses of silences consisted of two different phases. In order to know what has been left out I looked at what has been included. Thus, in the first phase I looked at the interviews in terms of what is said. The second phase consisted of ‘imagining’ what was missing from people’s accounts, what was not said or what was excluded. Bowleg (2008) and Cuardaz and Uttal (1999) have pointed out the importance of context for researching intersectionality often remaining implicit in people’s accounts. In similar lines, the first way of examining what was missing was done by analysing people’s accounts in relation to different and relevant contexts outside and within the immediate interview situation. I looked at discrepancies between what is ‘known’ and what is and not said. The second way was to look at contradictions in what was said within one and the same interview on a specific topic.

Silences (as any talk) in the data should be acknowledged to be a co-construction being produced in the very context of the specific interview situation framed by the interview guide and in the interaction between the interviewee and me as the interviewer.

Findings

I identified different intersectional strategies⁷, that is to say different ways of doing the relations between the categories. The intersectional strategies were divided into two main strategies, combining and separating strategies. Combining strategies are intersectional strategies in which a job was combined with wider societal social categories in different ways. The findings around combining strategies seem to be in line with some strategies identified by earlier research on intersectional identity work. In particular, there seem to be similarities in how disadvantages are downplayed, with the interviewees occasionally marginalizing a disadvantaged category not fitting their job-related identity (Essers and Benschop 2007) and/or even turning it to their benefit (e.g. Boogaard and Roggeband 2010, Zanoni and Janssen 2007). The findings suggest that there are some similarities in ways of relating to disadvantage at work across different social categories, by national, industry, and company contexts, and occupational and other groups of interviewees. Separating strategies, in turn, are the different ways in which wider societal social categories are kept separate from a job. Thus, my findings suggest that intersectional job-related identity work is not only about doing the relations between the categories in the sense of combining them in different ways, but also about keeping wider societal social categories separate from one’s job-related identity (cf. Ramajan and Raid 2013).

In the study being silent was identified as an important activity that people engaged in when constructing themselves a self-identity at work. Social categories were commonly talked about, but they were also silenced in different ways. According to my findings social categories were talked about at different levels, the organisation, others and oneself, all including different kinds of silences on inequalities. Rather than being total,

⁷ By using the term intersectional strategies I do not mean that identity work is necessarily intentional or fully transparent to the people doing it. However, not being aware of the identity work does not necessarily mean that people do not still engage in many different ways of controlling how they represent themselves.

silence was more a matter of different combinations of silence and ‘non-silence’. What the interviewees seemed to be mostly silent on were inequalities in organisations and/or those related to oneself at work. For example, being silent on disadvantages related to oneself was often a combination of silence and non-silence in terms telling about one’s experiences, but at the same downplaying their importance.

Figure 3 Main findings of the thesis

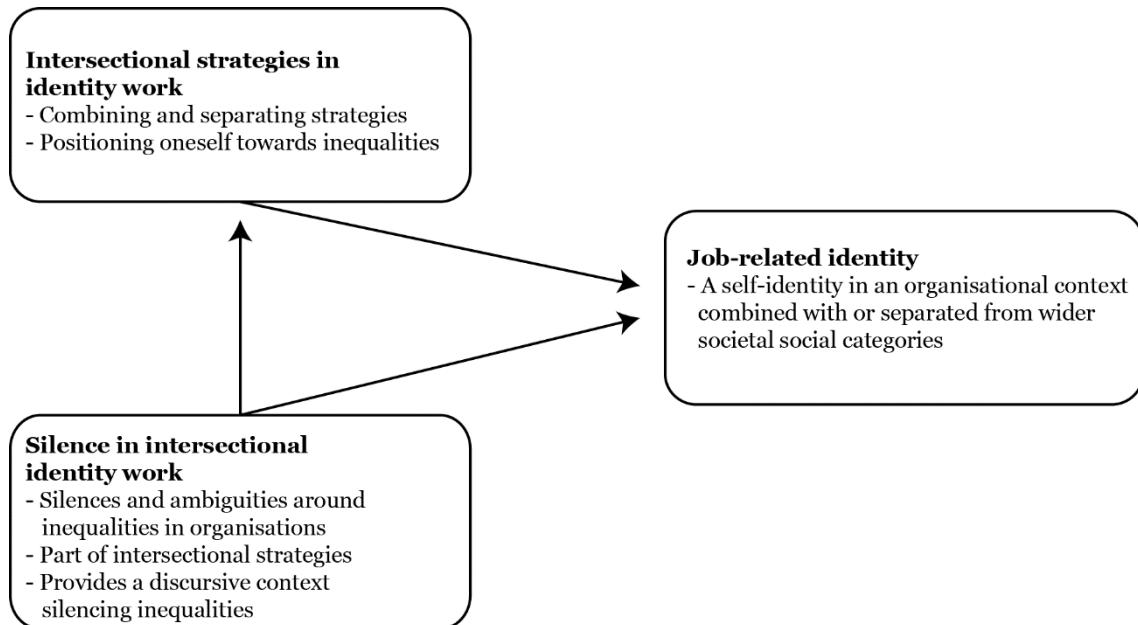


Figure 3 presents the process and outcome of intersectional job-related identity work in terms of the main findings of this study. The boxes on the left side on intersectional strategies and silence concern the process of intersectional identity work, whereas the box on the right side on job-related identity is about the outcomes. The box in the left upper corner presents intersectional strategies, that is, combining and separating strategies that people engage in as ways of combining job with wider societal social categories or keeping it separate from them. Intersectional strategies could be seen as different ways of positioning oneself towards privileges and/or disadvantages connected to the relevant social categories.

The box in the left lower corner represents the enactment of silence in intersectional identity work, that is, people being silent and/or ambiguous about inequalities in the organisation or related to oneself at work. The relation of silence to intersectional strategies and job-related identities can be seen as twofold. Silence could be seen to make part of the intersectional strategies or, at times, even being an intersectional strategy, since silence makes part of how people consciously or unconsciously relate to wider societal social categories in identity work. Moreover, silences on inequalities in organisations provides a discursive context for intersectional identity work. Finally, intersectional strategies and silences lead to a job-related identity.

Contribution

Being located at the interface of identities and intersectionality, this thesis seeks to contribute to research on identities in organisations, more specifically to the literature on identity work and what I call intersectional identity work in organisations. First of all, the thesis seeks to contribute to the existing literature by examining (intersectional) identity work through the notion of silence. Whereas silence as a more general topic or as related to social categories is not new in organisational research⁸, it has been surprisingly little examined in relation to individual level identities and identity work in organisations (*pace* Moaşa 2012, Ward and Winstanley 2003). Empirically, this study could be seen to add to the literature on (intersectional) identity work by identifying different ways in which people are silent about wider societal social categories in organisations as a part of their identity work.

Moreover, and maybe more importantly, silence could be also seen as having theoretical relevance for the understanding of (intersectional) identity work taking place in organisations. Silence has been argued to be an integral part of the construction of identities in organisations (Moaşa 2012, Ward and Winstanley 2003) in the sense that what is being excluded or not talked about, as well as what is being included or talked about, can be seen as constitutive of people's identities (Foucault 1981, Ward and Winstanley 2003). However, prior literature on identity work in organisations has predominantly focused on what is foregrounded in identity work, for example, what kinds of meanings or discourses people draw on when constructing a sense of self. My thesis seeks to contribute to the literature on identity work, seeing silence or being silent as an important activity that people engage in when constructing themselves a self-identity at work.

Furthermore, silence can be argued to be important in the context of intersectional identity work, with silence being closely connected to inequalities around social categories in organisations (e.g. Collinson and Hearn 1994). Silence has long been identified as taking place in relation to inequalities in organisations in different ways. For example, organisations are often constructed as equal despite the existing inequalities (Benschop and Doorewaard 1998, Korvajärvi 2011) or they can be depicted as diverse in an overly positive way that obscures inequalities (Prasad et al. 2006). At the same time, in the context of individual level intersectional identity work, silence has remained less explored. By combining the notions of identity work, intersectionality and silence, I have examined intersectional identity work at the interface of intersecting inequalities and interrelated silences. Whereas previous literature has identified inequalities as central for doing intersectional identity work, the topic of silence has often remained rather implicit, relating to, for example, different ways of downplaying a disadvantaged category (e.g. Boogaard and Roggeband 2010, Essers and Benschop 2007, Zanoni and Janssen 2007). My findings indicate that while inequalities can be seen as important for how intersectional identity work is done, at the same time they can also become a topic that is

⁸ Working on the Academy of Finland Project 'Age, generation, and changing work-life balance and boundaries' I completed a literature review on organisations and silence. This generated about 200 published items, which interestingly were unevenly distributed in relation to specific organisational issues and aspects. For example, there were many items and, on gender and sexuality, and few on age.

in many ways silenced. Furthermore, the study suggests that intersectional identity work takes place between people's particular and more immediate experiences, or lack of experiences, of inequalities at work, and more general discourses on social categories at work silencing (or indeed not silencing) inequalities. Silence could, as such, be seen as a central part of how inequalities operate in intersectional identity work.

Looking at individual level silences and non-silences around social categories at work can be also argued to be important, since it can be seen as contributing to the understanding of how inequalities operate in organisations also more generally. Individual level intersectional identity work has been identified as potentially (re)producing inequalities in organisations (Boogaard and Roggeband 2010), and my findings raise questions around how silence in intersectional identity work might operate in (re)producing organisational inequalities.

In addition, this study seeks to contribute to the literature on identity work and intersectional identity work, through the identification of different intersectional strategies, notably combining and separating strategies as ways of relating to wider societal social categories as constructed or not as part of one's job-related identity. While previous literature around intersectional identity work has identified many ways in which wider societal social categories can be combined with job-related identities, there has been less emphasis on how the two are kept apart. Thus, this study can be seen to add to the literature on identity work and intersectional identity work in organisations by having identified different ways in which people separate wider societal social categories from their job-related identities by constructing them as unimportant or irrelevant in the organisational context (cf. Ramajan and Raid 2013). I suggest that intersectional job-related identity work is not only about combining categories in different ways, but maybe equally importantly about keeping one's job-related identity separate from wider societal social categories (cf. Ramajan and Raid 2013).

Separating strategies can be also argued to be important in terms of their implications for what kind of identities people construct for themselves in organisations, favouring, for example, individualistic notions of self. Moreover, they can be seen to maintain or reproduce a discourse on identities in organisations as being unattached to wider societal social categories, obscuring the importance of different positions of privilege and/or disadvantage influencing who people are or can become at work.

Relevance to business

The findings call for recognition of the importance of keeping equality in a full and complex way on the organisational and management agenda. People's experiences, possibilities and identities in organisations are rather different depending on not only their organisational position but also on other relevant and available social categories. At the same time, existing inequalities can easily be obscured, possibly leaving an illusion of equality, which may make organisational and societal inequalities all the more difficult to combat. Thus, it is important to critically evaluate equality and inequality at the organisational level in terms of the organisational culture, structures and practices, and

also to reflect on them in relation to oneself. Being reflective on one's own privileges and disadvantages might also help one to understand others' experiences in the organisation, as well as to see power relations that could otherwise remain invisible. This can be seen to be particularly important in the case of management or others in organisational power positions who have greater opportunities to influence the direction and development of the organisation.

After finishing the thesis, I have continued to work with questions on silences and inequalities. The thesis has so far contributed to two new research projects with successful funding applications: a post-doctoral study on diversity, inequalities and silences in ICT companies and a large five year Academy of Finland Project 'Social and Economic Sustainability of Future Working life Policies, Equalities and Intersectionalities in Finland', in which inequalities and silences is a central topic. There is clearly more research needed on the relation between these two to unpack some important mechanisms through which inequalities are (re)produced and to find solutions for how they might be combatted in organisations.

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