**European Doctoral Programmes Association
in Management & Business Administration**

EDAMBA JOURNAL

18th Thesis Competition 2020

EDAMBA Journal

Thesis Competition 2020 Summaries

Editor

Agnes Zsokà

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 28 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 since1992 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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Contents

FIRST AWARD

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Unpacking the Interplay Between Process Improvement Approaches and Product Innovation

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Abstract

This paper explores how organizations manage the interplay between process improvement approaches (PIAs) and product innovation. Using a qualitative multiple-case study method, four different configurations for managing the interplay emerged - "strategic and holistic", "facilitating and empowering", "operational", "project-based"- and their associated mechanisms were identified. Under each configuration, the interplay is managed through integration or separation. PI has the potential to enable innovation if it is loosely integrated in the innovation processes. However, a tight integration of PI might constrain radical innovation. Findings provide empirical evidence on the varied and paradoxical use of PI in triggering different degrees of product innovation.

INTRODUCTION

Process improvement approaches (PIAs) are "organizational initiatives intended to improve the efficiency, effectiveness and consistency of work—such as improving product designs, reducing errors, and decreasing requirements for time, money, and other resources" (Collins and Browning, 2019, p. 216). For over a century, researchers in operations management have advocated the introduction of PIAs and standards to increase organizations' efficiency and productivity (Taylor, 1911). On the contrary, strategy and innovation scholars have stressed the negative effects of efficiency and productivity-gains on organizations' capacity to adapt and innovate. In this context, Abernathy (1978) introduced the notion of the *productivity dilemma* and "conjectured that short-term efficiency and long-term adaptability are inherently incompatible" (Adler et al., 2009, P.99). This argument has since been framed in different, but related ways, for example stating that "exploitation" crowds-out "exploration", and that standardization hinders creativity (Schad et al., 2016). In line with these perspectives, several researchers in strategy and innovation have considered PI and product innovation, and their associated processes, practices and concepts, as conflicting if not diametrically opposed (e.g. Benner and Tushman, 2003). For example, PIAs such as lean, six sigma, and total quality management (TQM), have been associated with exploitation, efficiency, standardization, and

control, whereas innovation requires exploration, flexibility, and adaptability (Benner and Tushman, 2003).

In contrast with the critiques, a considerable amount of research in operations management (OM) highlights the benefits that PIAs bring to organizations, not only in term of greater efficiency and flow, but also in creating customer value, and innovating products and services (Modig and Ahlstrom, 2012). Specifically, in relation to the interplay between PI and innovation, the literature provides no clear answers because researchers stand divided on whether PIAs facilitate or inhibit innovation. Proponents of PIAs argue that PI plays a crucial role in allowing organizations to innovate its product by creating an environment of trust, collaboration and learning (Choo et al., 2007). However, opponents of PIAs suggest that PIAs drive rigidity and standardization that may align with incremental innovation but hinder radical one (Benner and Tushman, 2003).

Nonetheless, empirical research shows mixed results regarding the relationship between different PIAs and product innovation- in particular radical innovation (see, e.g., Benner and Tushman, 2002, Kim et al., 2012). In addition, to the heterogeneous theoretical and empirical arguments that exist in the literature, most scholars have focused on examining PI tools, rather than concentrating on how PI is deployed and how it interacts with innovation-related activities. Therefore, this paper aims to explore the following question: *how do organizations manage the interplay[1] between PI and product innovation?*

It does so by drawing on the literature on ambidexterity. Ambidexterity is the ability to pursue contradictory goals (Schad et al., 2016). Studies in these areas have aimed to identify approaches for managing conflicting goals in organizations such as exploration and exploitation. Particularly, some OM researchers used the lens of ambidexterity to examine PIAs. Some research proposed that some elements of PIAs enable exploration and exploitation (Choo et al., 2007). Others proposed contextual mechanisms to manage tensions associated with the implementation of PIAs such as efficiency and flexibility (Adler et al., 1999). However, this paper diverges from previous studies by: First, while past research mainly aimed to quantify the impact of PI on innovation (Kim et al., 2012), this study intends to explore the dynamics of the interplay between PIAs and innovation-related activities. Second, this research explores this interplay at the organizational level (i.e., across functions) rather than focusing on manufacturing units only.

THEORETICAL FRAMEWORK
The interplay between PI and innovation
The literature that examined the relationship between PIAs and product innovation shows divergent theoretical and empirical arguments. The first group considers PIAs mainly as sets of efficiency-oriented practices that are based on conformity and adherence to rules, reduction of variation, standardization, and exploitation of existing knowledge (Benner and Tushman, 2002). From this perspective, PIAs are seen as promoting improvement in products and hindering a more radical innovation for three main reasons. First, these approaches aim to reduce variation in processes, whereas radical innovation requires variation-increasing

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[1] The "interplay between PI and product innovation" refers to the association between PI related activities (approaches, practices, processes) and the product innovation-related activities (processes, practices, or units) across the organization.

activities and slack resources. Second, PIAs often rely on standardization and formalization to maintain improvements and stability; however, standardization may impede flexibility, creativity and innovativeness (Zeng et al., 2015). Third, the customer-centric nature of PIAs can trap organizations in improving their existing products for existing customers, instead of creating radically new ones. Emphasis on existing products establishes "a focus on easily available efficiency and customer satisfaction measures" (Benner and Tushman, 2003: 239), which goes against radical innovation and penalizes adaptation and the achievement of long-term goals (Adler et al., 2009).

The second group of scholars suggests that PI can create a learning environment that is based on trust, collaboration, and knowledge creation, thus PIAs regarded as mechanisms to support both incremental and radical product innovation. For example, Gutierrez Gutierrez et al. (2012) considered Six Sigma as an organizational learning process that stimulates knowledge absorption by allowing process management and teamwork. Scholars that adopted this perspective regarded PIAs as sets of principles and practices that create a fertile environment for innovation. For instance, these approaches use iterative cycles of continuous improvement that involve employees in decision-making. This provides employees with a sense of responsibility, engagement and ownership, which enhance their creativity and their capacity to innovate. Moreover, "control in process management is likely to assist firms to maintain stable goals, to reduce product development time, and to meet customer needs in both existing and emerging markets" (Kim et al., 2012: 304).

Additionally, empirical results have also proven inconclusive. For example, Benner and Tushman (2002) found a negative relationship between process management and radical innovation. Mehri (2006) identified that lean, through *kaizen* and waste minimization, had a negative effect on employees' creativity and their potential to innovate. Conversely, others found positive results; Schulze et al. (2013) reveal that value-stream mapping facilitates "feed-forward learning" in new product development processes. Moreover, Kim et al. (2012) found that quality management practices can enable both incremental and radical product innovation.

Organizational ambidexterity

When studying the links between PI and innovation, some authors have drawn on the concept of ambidexterity. For instance, Moreno-Luzon et al. (2014) explored the relationship between TQM and ambidexterity. Benner and Tushman (2003) proposed that an ambidextrous organizational form moderates the interplay between process management and innovation, while others defined PIAs using an ambidexterity lens (Ng et al., 2015).

The term "organizational ambidexterity" was coined by Duncan (1976), who argued that innovative-activities should be separated from non-innovative ones. The use of the concept was renewed by March (1991), who stressed the importance and the difficulties in pursuing both "exploration" and "exploitation" in organizations. Exploration refers to activities related to "variation", "risk-taking", "experimentation", "flexibility" and "innovation", whereas exploitation is associated with "refinement", "production", and "efficiency", (March, 1991, p. 71).

Research suggests various ways in which competing demands in organizations can be managed. The most commonly used ones are "integration" and "separation" (Schad et al., 2016). The latter involves managing conflicting goals through having one unit focuses on explorative-activities and another on exploitative ones. Integration entails concentrating on complementarities (Schad et al., 2016). For example, Gibson and Birkinshaw (2004) introduced the concept of "contextual ambidexterity" and suggested that the tension between alignment and adaptability can be managed in one unit by creating a context that builds on trust,

empowerment, discipline and stretch that allows individuals to pursue different contradictory goals.

The above review shows that there are contradictory arguments and inconclusive empirical results concerning the interplay between PIAs and innovation. This study aims to bring clarity to this debate by drawing on the paradox and ambidexterity literature.

METHODOLOGY

This research adopts a qualitative multiple case study method. The selected firms were purposefully sampled. With the aim of elaborating the conflicting arguments found in the literature, two dimensions were used: the extent of PI usage and the degree of product innovation. While these criteria were identified at the beginning of the sampling phase, further validation of the initial assessment was sought during the data collection and analysis process. PI characteristics were derived in three ways: first, the breadth of PI usage across the organization, as derived from the interviews and documentary evidence. Second, key informants were explicitly asked regarding the use of PI in the organization. Third, data were collected on awards received by the organization in relation to PI practices.

The degree of product-innovation was evaluated in relation to both market and technology, consistently with extant research (e.g. Danneels and Kleinschmidt, 2001). A product that displays new technology, or knowledge and satisfies new customers was identified as radical innovation. Conversely, instances, where current technology, or knowledge were used, and the product satisfied existing customers were identified as incremental innovations. Informants were asked to provide examples of recent products and to classify them as either incremental or radical innovation. The award of innovation prizes was also considered.

Specifically, four large international manufacturing companies were selected: AeroCo, Fast-CarCo, PharmaCo and Cheap-CarCo. These firms are all product-based and similar in size, but operate in different industries - automotive, aerospace and pharmaceutical (see Table 1).

Table 1: Research context

		Fast-CarCo	AeroCo	PharmaCo	Cheap-CarCo
Description	*Main Business*	A multinational automotive company that designs, engineers and manufactures premium vehicles	A multinational engineering company operating in the aerospace sector. It focuses on world-class power and propulsion systems	PharmaCo is a multinational organization that creates, develops, manufactures and markets pharmaceutical products	A multinational automotive organization that aims to design and engineer vehicles. It focuses on producing compact, not feature-rich vehicles.
	Sector/ Industry	Manufacturing/ Automotive	Manufacturing/ Aerospace	Manufacturing/ Pharmaceutical	Manufacturing/ Automotive
Main Similarities	*Size*	Large (38,000 employees)	Large (49500 employees)	Large (99,500 employees)	Large (60,000 employees)
	Time-to-Market	Relatively long (5-7 years)	Long (7 - 12 years)	Long (12- 15 years or more)	Relatively long (between 5-7 years)
	Degree of regulations	Relatively high	High	High	Relatively high
	Length of PI usage	Using PI approaches for more than 15 years.	Using PI approaches for more than 15 years.	Using PI approaches for more than 15 years.	Using PI approaches for more than 10 years.
Main differences	*PI usage*	- Using PI across the organization where appropriate - Using different types of PI approaches and practices- such as lean, six sigma, TQM, etc. - There is a clear awareness of PI across the company even in the R&D area.	- Using different PI approaches such as lean, six sigma, TQM, across the organization - Having a formal process for PI - Having dedicated teams for facilitating PI implementation	- Using PI only in manufacturing - Using different PI approaches (lean & six sigma). - There is no formal program for PI - There is no awareness of PI across the company except in manufacturing	- Using PI mostly in the manufacturing area and as projects in engineering - Using different PI approaches (mostly six sigma, lean, TOC) - Does not have a formal process for PI - Does not have dedicated teams for facilitating PI implementation
	Product innovativeness	Relatively high. - Have different types of product innovation both incremental, and radical	Relatively low. - Mostly focused on improving the current product (incremental product innovation)	Relatively high. - Have different types of product innovation both incremental, and radical	Relatively low. - Mostly focused on improving the current product (incremental product innovation)

By comparing the PI practices used across the case organizations, it is possible to see how the four companies use a variety of PI elements (practices and tools) such as DMAIC[2], employee involvement and others. Some of these elements are associated with Six Sigma, others with lean, or other PIAs (Collins and Browning, 2019) (see table 2).

Table 2- Selected examples of PI elements (tools and practices) in the case organizations

Case organizations	PI approaches	Example PI elements (practices and tools)
Fast-CarCo	Six Sigma, lean and TQM	**Technical elements** DMAIC, PDCA, FMEA, SPC, Kanban, visual management, six sigma, 5 whys (roots cause analysis), value stream mapping, process definitions and control **Behavioural elements** Kaizen, employees' involvement in PI, continuous improvement, top management commitment, PI specialists
AeroCo	Six Sigma, lean and TQM	**Technical elements** DMAIC, value stream maps, 8Ds, visual management, standards operating procedures **Behavioural elements** Cultural changing programs, Kaizen, employees' involvement in PI, training programs, PI specialists, top management commitment
PharmaCo	Six Sigma, lean and TQM	**Technical elements** 5 whys, problem solving tools, Kanban, DMAIC, 5S **Behavioural elements** Employees' involvement in PI (in manufacturing), PI specialists
Cheap-CarCo	Six Sigma and lean	**Technical elements** DMAIC, elevation of constraints **Behavioural elements** Employees' involvement

Over a 15-month period, a total of 44-semi-structured interviews were conducted, and 55 relevant documents were gathered. The interviews were carried-out with senior managers from different functional specialisms (strategy, R&D, manufacturing, engineering, design and marketing). A snowballing technique was used to ensure key informants were included.

Data were analyzed within and across cases through a multi-stage iterative process which included several rounds of coding and refinement using the NVivo software. The analysis was broadly conducted in three stages.

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[2] DMAIC is a structured problem-solving tool commonly used when implementing six sigma

Stage 1: Within-case analysis to identify the main themes within each organization: The first round of analysis was initiated by an in-depth reading of the transcripts for each of the case organizations separately to allow "the unique patterns of each case to emerge" (Eisenhardt, 1989, p.540). Initially, first order codes were used to identify the characteristics of PIAs in each organization - where they were being used, by whom and how – as well as product innovation characteristics, including the types of products and the new product development process. In this round of coding descriptive sentences were used to adhere to the informants' terms . After identifying the first order coding, a detailed description was written for each case.

Stage 2: Cross-case comparison: This includes identifying the main similarities and differences between the organizations. By comparing the findings from the four companies, it was clear that PIAs were deployed differently, especially in terms of scope and formality, and the degrees of innovation also varied. Moreover, each organization appeared to use different mechanisms to manage the interplay between PI and innovation (e.g. performance measurement, training, structure) and to conceive of such interplay in diverse ways. By comparing the main themes across cases, the second order codes and the aggregate dimensions were derived.

Stage 3: Identifying configurations for managing the interplay between PI and innovation: the emerging coding structure was used to build tentative relationships between the identified second order codes. These relationships were refined multiple times through discussions and writing. Through iterations between data, analysis and the relevant literature, four configurations for managing the interplay between PI and innovation emerged.

FINDINGS

The analysis led to two main findings. First, three aspects characterize the deployment of PI in the case organizations: formality, scope, and its integration in the innovation-processes. Second, four configurations for managing the interplay between PI and innovation emerged: (1) "strategic and holistic" (AeroCo), (2) "facilitating and empowering" (Fast-CarCo), (3) "operational" (PharmaCo), and (4) "project-based" (Cheap-CarCo).

PI deployment aspects

Unsurprisingly, the chosen organizations deploy PIAs differently. However, while one may expect that greater use of PI practices and tools at Fast-CarCo and AeroCo to be associated to two separate patterns than at PharmaCo or Cheap-CarCo, this was not necessarily the case. Indeed, the analysis shows that it is not only PI intensity that matters, but also its formality, scope and integration in the innovation-processes (see table 3).

Table 3: PI aspects

PI Dimensions	Sub-dimensions / categories
PI formality: refers to the degree to which PI usage is required in the organization	• **Expected formality**: Involves considering PI as part of the company's strategic direction, as everyone in the organization is required to use PI practices, and employees' involvement in PI-related activities is monitored. • **Voluntary PI formality**: refers to individuals' autonomy in deciding whether and when to use PI.
PI Scope: reflects the spread of PI usage in the organization	• **Pervasive scope:** PI is used everywhere in the organization including the more innovation-related areas (e.g., R&D, product development, design and engineering). • **Isolated or confined scope**: Indicates that PI is implemented mainly in one unit, typically manufacturing
Integration	It captures the use of PI in the innovation processes and varies between "integration" and "separation" (i.e., segregating PI from the innovation processes).

While both AeroCo and Fast-CarCo make a pervasive use of PI, they display different levels of formality: in AeroCo it is expected, whereas in Fast-CarCo it is mainly voluntary. As mentioned in the methodology section, a few years ago, AeroCo explicitly introduced PI in the company strategy, where employees are expected to use PIAs. At Fast-CarCo, the current leadership decided to invest in PI, but made its use rather voluntary. More recently, the firm created a portal that collects different PI tools, approaches, examples of improved processes from different functions, and various "best practices". The portal can be accessed by everyone in the company, but no specific approach is imposed. In PharmaCo and Cheap-CarCo, PI usage is confined to one area, but with different degrees of formality. At PharmaCo, PI is expected but only in manufacturing as it is regarded as inapplicable in other areas and a barrier for innovation overall. Within manufacturing, though, PI is considered fundamental and employees are expected to use PI to maintain rigor in the production process and to ensure compliance with regulations. At Cheap-CarCo, PI usage is more present and expected in manufacturing, but its use is rather voluntary in engineering, design and product development. The use of PI outside manufacturing is enabled by employees' awareness and competence in it. At the same time, PI is used informally at Cheap-CarCo as it is believed that it may hinder innovation.

Four configurations for managing the interplay between PI and innovation

From the differences identified in PI deployment in the four organizations, four configurations emerged: (1) *strategic and holistic* refers to the implementation of PI as a company-wide strategy in which everyone should be involved; (2) *facilitating and empowering* indicates a context where employees can decide which PI method to use; (3) *operational* describes the use of PIAs only in manufacturing units; (4) *project-based* relates to the use of PI, when deemed appropriate, not only in manufacturing, but also in other units. These configurations suggest that the interplay exists in various patterns, as in some cases PIAs are associated with the innovation-related activities and in other cases they are separated from each other (see Table 4).

Table 4- Identified configurations for managing the interplay between PI and innovation

	Strategic and holistic	Facilitating and empowering	Operational	Project-based
Case organization	AeroCo	Fast-CarCo	PharmaCo	Cheap-CarCo
Scope of PI	- Pervasive	-Pervasive	-Isolated: Confined to manufacturing	-Isolated: Dominant in manufacturing and occasionally used in other areas
PI formality	Expected	Voluntary	Expected in manufacturing	Voluntary
How the interplay between PI and product innovation is viewed	-Overall PI is regarded as an enabler for product innovation	-PI as indirect facilitator of product innovation	-PI regarded as irrelevant to product innovation	-PI is seen as applicable mainly in the back end of product development process and as a barrier in the front end
Mechanisms for managing the interplay between PI and innovation	- *PI usage:* PI adapted to the area that is used in. - *Management systems:* Balanced performance objectives for both PI and innovation, balanced training (PI and innovation training, knowledge sharing portal) - *Structural mechanisms:* Balanced PI and innovation teams	- *PI usage:* PI adapted to the area that is used in. - *Management systems:* Entrepreneurial orientation: flexibility to start new projects, balanced performance objectives for both PI and innovation - *Structural mechanisms:* process-oriented structure	- *PI usage:* PI not used in R&D and in product development - *Management systems:* Entrepreneurial-orientation: flexibility to start new projects - *Structural mechanisms:* PI and innovation happen in separate locations	-*PI usage:* PI not used in R&D and in product development - *Management systems:* Innovation and improvement championships - *Structural mechanisms:* The processes for developing new and current technologies are kept separate

Interplay between PI and innovation related activities

The interplay between PI and innovation varies across different functional units in the four companies. This was evident in functional units associated with ideation and technology generation (e.g., technology development in automotive and AeroCo, and early stages of drug development in PharmaCo). For example, in the "facilitating and empowering" configuration adopted at Fast-CarCo, DMAIC is used in a relatively unstructured way to guide the technology development process whilst guaranteeing sufficient flexibility. Moreover, the voluntary formality in using PIAs was found to facilitate collaboration and create trust. In this case, PI is seen as enabling the idea generation process. On the contrary, at Cheap-CarCo and PharmaCo which use an "operational" and "project-based" configurations respectively, PI is not used in the early stages of product development as it is considered to be inapplicable in these areas and

a barrier for creativity. While PIAs are used during the early stages of product development AeroCo, PI is seen to constrain creative thinking and therefore as hindering idea generation. At the same time, at the idea selection stage, PI plays the role of a gatekeeper, as it helps filter the ideas and select the most promising ones.

There were also differences in the use of PI at subsequence stages, which normally involve departments such as product creation and development, design and engineering. For example, at both AeroCo and Fast-CarCo, PI is adapted to product development, design and engineering. This adaptation is obtained by mixing lean with agile, using standardization in a loose manner, and translating the meaning and types of "waste" to these environments. Adapting PI helps to provide structure for product development, balancing flexibility and rigor, making PI relevant to people in design, engineering and product development and, therefore, allowing people space and time to innovate. However, at PharmaCo and Cheap-CarCo, the use of PI is discouraged in the design and product development areas, because it is seen as a barrier for innovation. This is because PI is considered as a rigid process which might limit flexibility and lead to a more incremental type of innovation.

Subsequent stages, which involve manufacturing and engineering, are characterized by high measurability and process-orientation. In all four companies, PI is regarded as applicable, and essential to maintain rigor in these areas. Therefore, the interplay between PI and innovation at the deployment stage is seen as a complementary rather than conflicting. For example, at PharmaCo, PI is used in the manufacturing unit to provide discipline, meet regulations and facilitate learning. Similarly, at Cheap-CarCo, through the use of a "Project-based" configuration, PI is considered to facilitate innovation. Here, PI is used as a controlling mechanism to avoid risk and maintain quality. At AeroCo and Fast-CarCo, PI is seen as applicable and complementary to innovation at this stage as well.

The role of the organizational mechanisms

Various organizational mechanisms play a role in the management of interplay. Each company used more than one mechanism. For example, in AeroCo and Fast-CarCo supports the integration of PIAs in the innovation processes, through using performance measurement objectives, specialized teams and training to promote both PI and innovation. However, Fast-CarCo allows flexibility for employees to start new projects in the research area through entrepreneurial-orientation.

PharmaCo focuses more on structural mechanisms as improvement and innovation goals are balanced by using PI and innovation in two separate areas, in addition to the autonomy given for employees in R&D through the entrepreneurial-orientation. Cheap-CarCo focuses on driving both PI and innovation through running challenges that encourage employees to participate in developing new ideas for improving processes, or current products, or generating new ones.

DISCUSSION AND PROPOSITIONS

The findings suggest that PI impact on innovation depend on where and how PIAs are used. The "how" is captured by the formality and usage of PI; the "where" by the scope of PI. Particularly, in some cases PI is integrated in the innovation-related activities whereas in other cases it is separate. Overall, the integration appears to trigger innovation, however, whether PIAs support the incremental or radical innovation one depends upon how PIAs are used within different areas in the organization. For instance, DMAIC are used loosely in both R&D and product development at Fast-CarCo. This adaptive use of approaches to the local context is

important to ensure their effectiveness. For instance, Canato et al. (2013) show that the inflexible implementation of Six Sigma at 3M made employees regard Six Sigma as misaligned with the "fundamental and distinctive values of the organization (creativity, tolerance for mistakes, self-initiative)" and as detrimental to innovation (Canato et al., 2013, p.1735). Conversely, the findings show that the adaptive use of PI help create trust, provide structure to innovation processes and allow space for employees to innovate, as in the cases of Fast-CarCo. Indeed, adapting PI to the local context may "buffer the negative effect of structure on creativity" (Choo et al., 2007, p.928), maintain flexibility and foster innovation.

In contrary, the standard and formal process at AeroCo seems to limit employees' capacity to explore new ideas. This is possibly because formal management approaches are sometimes perceived as controlling and as barriers to innovation (Amabile et al., 1996, P. 1162). On the contrary, at Fast-CarCo, employees' autonomy was highlighted by informants as an important enabler for exploration as the "autonomy around process fosters creativity because giving people freedom in how they approach their work heightens their intrinsic motivation and sense of ownership" (Amabile, 1998, p.82). Thus, autonomy is key to creativity and innovation. This highlights the importance of PI in creating an environment of trust for people to engage in innovation and explorative activities (Kim et al., 2012). The above discussion leads to the following propositions:

P1a: Voluntary PI formality and pervasive scope (loose integration) trigger both incremental and radical innovation.

P1b: Expected formality and pervasive scope (tight integration) trigger incremental innovation but hinder radical innovation.

Previous research suggests that structural separation of exploitative and explorative activities helps organizations pursue both incremental and radical innovation. Similarly, Benner and Tushman (2003) proposed that in an ambidextrous organization, PIAs and its associated practices do not affect radical innovation. The findings from PharmaCo align with this argument as PI appears to be disconnected from the innovation-related activities. In this case, PI is considered by employees as irrelevant to innovation and more applicable in production units. This separation helps in buffering the negative effect of the control effect that result from the expected PI formality in manufacturing from the creative units in R&D and product development. Consequently, PI appears not to affect product innovation.

While buffering PI from the innovation processes, through separation or loose integration, can trigger innovation, the excess in flexibility, employees' autonomy and slack resources appear to hinder innovation. For instance, Cheap-CarCO deploys PI through voluntary formality that allows employees the flexibility needed for innovation. However, a lack of performance measures associated with either innovation or PI deployment (as AeroCo and Fast-CarCo) and excessive flexibility are considered to be a sign of inefficiency and lack of discipline in the innovation process (Nohria and Gulati, 1996). Other authors have highlighted the importance of using PIAs to increase the efficiency of product development (Dalton, 2009), and suggested that a certain level of control is needed to facilitate innovation (Cardinal, 2001). Therefore, consistent with the literature argument, the findings from Cheap-CarCo suggest that flexibility in PI deployment appears to be needed to facilitate innovation; however, a lack of PI formality appears to prevent innovation. Therefore:

P2a: Expected PI formality and confined PI scope (separation) do not affect incremental and radical innovation.

P2b: Voluntary PI formality and confined scope (separation) prevent both incremental and radical innovation.

CONCLUSIONS

Findings present a configurational view of the interplay between PI and innovation. The paper's argument helps resolve the debate between those who suggest that PIAs trigger product innovation and those who argue that PIAs hinder it. Essentially, as emerged from the findings, two aspects appear to shape the interplay between PIAs and product innovation. First, *how* PI is used, which is encapsulated by the formality and usage of PIAs; second, *where* PI is used, as expressed by the scope of PI. According to the scope of PI, PIAs are either got integrated or separated from the innovation related activities. Both separating or integrating PI with the innovation related activities have the potential to trigger or hinder different types of innovation (radical or incremental). However, the potential effect depends on how PI is used (formality and usage). Particularly, loose integration of PIAs with the innovation related activities (voluntary formality and pervasive scope) and separation (expected PI formality and confined scope) facilitate innovation. Taken together, these arguments suggest that a configurational view of the interplay offers a better way of thinking of the relationship between PIAs and product innovation. Accordingly, *how* and *where* PI is used in the organization seem to matter more than the types of tools being implemented when considering the impact of PI on product innovation. Therefore, this paper challenges the appropriateness of the question 'what is the impact of PI on innovation?' as posed in previous studies and suggests that only once the relationship between the two is made explicit, can the effect of PI on innovation be examined.

Practically, this research offers four configurations for managing the interplay between PI and innovation. Each one can be used based on company's performance priorities. For example, if managers are interested in broadening operational excellence programs, a "strategic and holistic" or "facilitating and empowering" ones can be considered. On the other hand, a "project-based" configuration could be used in an organization that is still in the beginning of its journey toward excellence and innovation enhancement.

Limitations

Findings are drawn from multiple case studies and are therefore limited in their generalizability. However, the main purpose of this research was not to generalize across other settings, but rather to explore how organizations deploy PI and manage the interplay between PI and product innovation-related activities and its impact. Thus, the findings may be applicable in other similar contexts (product-based organizations). For instance, this research stressed the importance of PI scope and formality, these aspects can be considered in different context were PI and innovation goals considered as essential part of the business. Further research could explore the pervasiveness of the research findings.

Moreover, exploring the interplay in various industries limits the possibility of drawing causal relationships between the identified factors that shape the interplay. As Doty and Glick (1994) noted, one of the limitations of typology research is "inadequately developed because the causal processes operating within each type of organization are not fully specified" (P. 230). Thus, future research is encouraged to test the research propositions and explore causality where possible.

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SECOND AWARD

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The Relationship Between Leader-Member Exchange and Counterproductive Work Behaviour

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Abstract

We offer three main contributions that further our understanding of why CWBs occur. The first is to LMX literature, by presenting a comprehensive literature review with a use of bibliometrics and the development and evolution of LMX research. Second, using multilevel approach we show that MTL (level-2) moderates the relationship between LMX and CWB (level-1). Third, moderated-mediation analysis with PROCESS is applied, where we show that attachment styles (moderator) are changing social exchange patterns through psychological safety (mediator). Results support negative relationship between SLMX and CWB, mediation effect and moderation effect for insecure attachment.

Relevance of the topic area and the issues it addresses

Performance in organizations can be broadly classified in three categories, namely task performance, organizational citizenship behaviour (OCB), and organizational misbehaviour (OMB; also termed counterproductive work behaviour (hereafter: CWB)) (Rotundo & Sackett, 2002; Viswesvaran & Ones, 2000). The CWB has drawn attention as involving activities reflecting one extreme as opposed to OCB and has been deemed extremely costly for organizations.

The diversity of leaders and followers is associated with the development of a relationship and is a prerequisite for the success of the exchange due to socio-psychological processes that arise as a result of perceived differences in the group and context in which leader-member exchange relationship (hereafter: LMX) is developing (Scandura & Lankau, 1996). The main premise of the theory is that leaders differentiate among followers (Van den Broeck et al., 2014). Although many researchers have studied the LMX link with performance factors (e.g., overall job satisfaction), as well as behavioural variables (e.g., commitment to the organization), more

extensive analysis is needed, which would also include other aspects in the link between LMX and CWB through studying the moderation or mediation effects (Byun, Dai, Lee, & Kang, 2017).

Even though there are several studies that have thus far provided reviews of the LMX theory, qualitative and quantitative, there is still no clear consensus, which background theories informed the development of LMX. However, recent research questions these core roots of LMX and calls for examination into additional layers of complexity to its history (Dulebohn, Wu, & Liao, 2017; Day & Miscenko, 2016). Thus, it follows: *RQ1: What is the evolution and development of LMX field.* The first part of the dissertation is an extensive literature review using a combination of bibliometric techniques: co-citation analysis, co-word analysis and bibliographic coupling.

In line with our findings based on literature review, we follow increased interest of researchers in examining negative outcomes related to employee behaviour. Values internal to a leader serve as regulatory guide and are more likely to be related to leaders' and followers' motivational, affective, and cognitive processes (Lord & Brown, 2001; Kark & Van Dijk, 2007). Motivation to lead (hereafter: MTL) has been conceptualized as an individual differences construct, through which leader behaviour is affected in relation to individuals' personality and values (Chan & Drasgow, 2001). According to social exchange theory, relationships can be considered of different qualities such as social leader-member exchange (SLMX) and economic leader-member exchange (ELMX) rather than different levels of quality that fall on a continuum of high and low exchange (Kuvaas, Buch, Dysvik, & Haerem, 2012). Therefore, high LMX relationships are likely to encourage employees' identification with organizational values and create a relational obligation, which would motivate employees to engage in behaviours with favourable outcomes (Lavelle, Rupp, & Brockner, 2007) rather than counterproductive. Thus, it follows: *RQ2: What is the effect of motivation to lead in the relationship between SLMX/ELMX and CWB.*

Additionally, in examining social interaction and relations, it is important to consider how different patterns of interaction determine social exchange process. Therefore, attachment theory enables us to understand interpersonal dynamics in a dyadic relationship more in depth (Popper, Mayseless, & Castelnovo, 2000; Troth & Miller, 2000), as individuals develop different representations of themselves and significant others through their experiences in past relationships (Davidovitz, Mikulincer, Shaver, Izsak, & Popper, 2007). The concept of attachment is relevant in examining social-relational behaviour and enables us to look at the dyadic relationship accounting for relational dynamics and individual differences simultaneously (Černe, Batistič, & Kenda, 2018; Popper, Mayseless, & Castelnovo, 2000), complementing research on LMX. We propose that attachment styles should bring out the quality of LMX, where leader-follower exchange depends on individuals' experience in the past relationships. Therefore, it follows: *RQ3a: What are the effects of attachment styles in the relationship between LMX and CWB?*

LMX has a buffering role in when it comes to lower levels of psychological safety and serves as social support for in-group members (Hu & Zuo, 2007). When employees are not facing a psychological safe environment, they take advantage of high quality exchanges for preventing negative effects of such insecurity. On the contrary, low LMX and experiences of psychologically unsafe climate can enhance negative consequences (Probst, Jiang, & Graso, 2016). We are interested in examining the role of psychological safety that underlies the

observed relationship between LMX and CWB. Thus, it follows: *RQ3b: What is the role of psychological safety in the relationship between LMX and CWB?*

The dissertation builds on the theoretical framework of social exchange theory and the norm of reciprocity as one of the most common rules of exchange process used to explain engagement of individuals in certain types of exchange relationships. First, following Kuvaas et al. (2012) we differentiate between social and economic exchange as relationships of two different qualities to better understand these interdependent exchanges and how they are related to CWB. While social exchange process is two-sided, we examine how LMX relationships are related to CWBs under certain conditions of leaders' MTL. The construct of MTL has some conceptual similarities with theoretical foundations of social exchange theory. Specifically, when individuals weigh costs and benefits for undertaking leadership roles is analogous to reciprocal interdependence in exchange relationship, when employees respond differently based on perceived balanced or unbalanced relationship. Similarly, bridging attachment theory and social exchange theory helps to explain how patterns of interaction change in exchange relationship. Attachment orientations are developed based on reciprocal responses of proximal attachment figures, which is manifested in the development of interpersonal relationships at work. Moreover, depending how LMX relationships are developed, this predicts perceptions of psychological safety. Therefore, exchange patterns enable higher or lower psychological safety, through which outcome behaviour that they positively or negatively value is manifested. Therefore, we examine the two-way interaction of LMX and leadership attachment and how it changes levels of psychological safety.

Figure 1 shows the interplay of examined constructs, research questions, methodological approaches.

Figure 1: Representation of conceptual model for respective chapters

Chapter 2: Hierarchical linear modeling

RQ2: What is the effect of motivation to lead in the relationship between LMX and CWB.

MOTIVATION TO LEAD

Leader – Level 2

Follower – Level 1

H2a (SLMX)
H2b (ELMX)

Chapter 1: Bibliometric review

RQ1: What is the evolution and development of LMX field?

LEADER-MEMBER EXCHANGE

H1a (SLMX)
H1b (ELMX)

COUNTERPRODUCTIVE WORK BEHAVIOUR

PSYCHOLOGICAL SAFETY

ATTACHMENT STYLES

H3

Chapter 3: Moderated-mediation PROCESS

RQ3a: What are the effects of attachment styles in the relationship between LMX and CWB?
RQ3b: What is the role of psychological safety in the relationship between LMX and CWB?

H4a: secure
H4b: avoidant
H4c: anxious

STUDY 1: A multi-technique bibliometric analysis of LMX research development

The use of three different bibliometric techniques allows us to trace three important aspects and aims of our research: a) document co-citation, which explores relationships and interactions between different researchers, thus revealing the intellectual traditions within a field, and can trace a field's evolution over time (Vogel, 2012); b) co-word analysis, which allows us to identify key clusters of content and how they are connected to each other (He, 1999); and c) bibliographic coupling, which enables us to identify emergent topics and potential future avenues of the development of the literature (Van Raan, 2005). The key outcome of such an approach is to map the field, discuss similarities and differences with findings offered by existing qualitative and meta-analytic reviews of the LMX literature, and propose most promising developmental areas for the future evolution of the field.

To identify our sample of primary papers, we used a keyword search for "leader member exchange" in the database Web of Science, identified as the most reliable database (Batistič & Kaše, 2015; Zupic & Čater, 2015). Because of the large number of unique secondary documents, a cut-off point, or a citation threshold, which refers to a minimum number of citations of a cited reference, was applied to the reference list. We applied different thresholds in each period to limit the analysis set to a manageable size (due to computer power limitations) while still providing as broad representation of the intellectual structure as possible (Zupic & Čater, 2015). Once imported, that database was normalized by VOSviewer (van Eck & Waltman, 2014). The same dataset was used for all three techniques and we similarly defined three successive periods of observation: until 1999, 2000–2009, and 2010–2017.

The clusters identified with co-citation analysis reflect the community structure of the field and suggest that the field of LMX research is not strictly segmented into well-defined and long-lasting research schools, but involves an interrelated, nested, and active socio-cognitive structure that consists of dynamic informal colleges. We use an evolutionary framework proposed by Vogel (2012) and used in other fields such as leadership (Batistič, Černe, & Vogel, 2017).

First period reveals that most of the research at that time was driven by social exchange theory and the norm of reciprocity, which shaped theoretical foundations for LMX development. In the next period, despite conceptual similarities between perceived organizational support and LMX, theoretical development and research continued independently. Finally, in the last period authors gave considerable attention to theoretical reviews of LMX, considered different methodological approaches to address mediation–moderation models and the use of different statistical methods in social sciences. This is the period in which LMX was effectively incorporated into the leadership field. Figure 2 presents comprehensive summary results.

Figure 2: Development patterns of LMX research
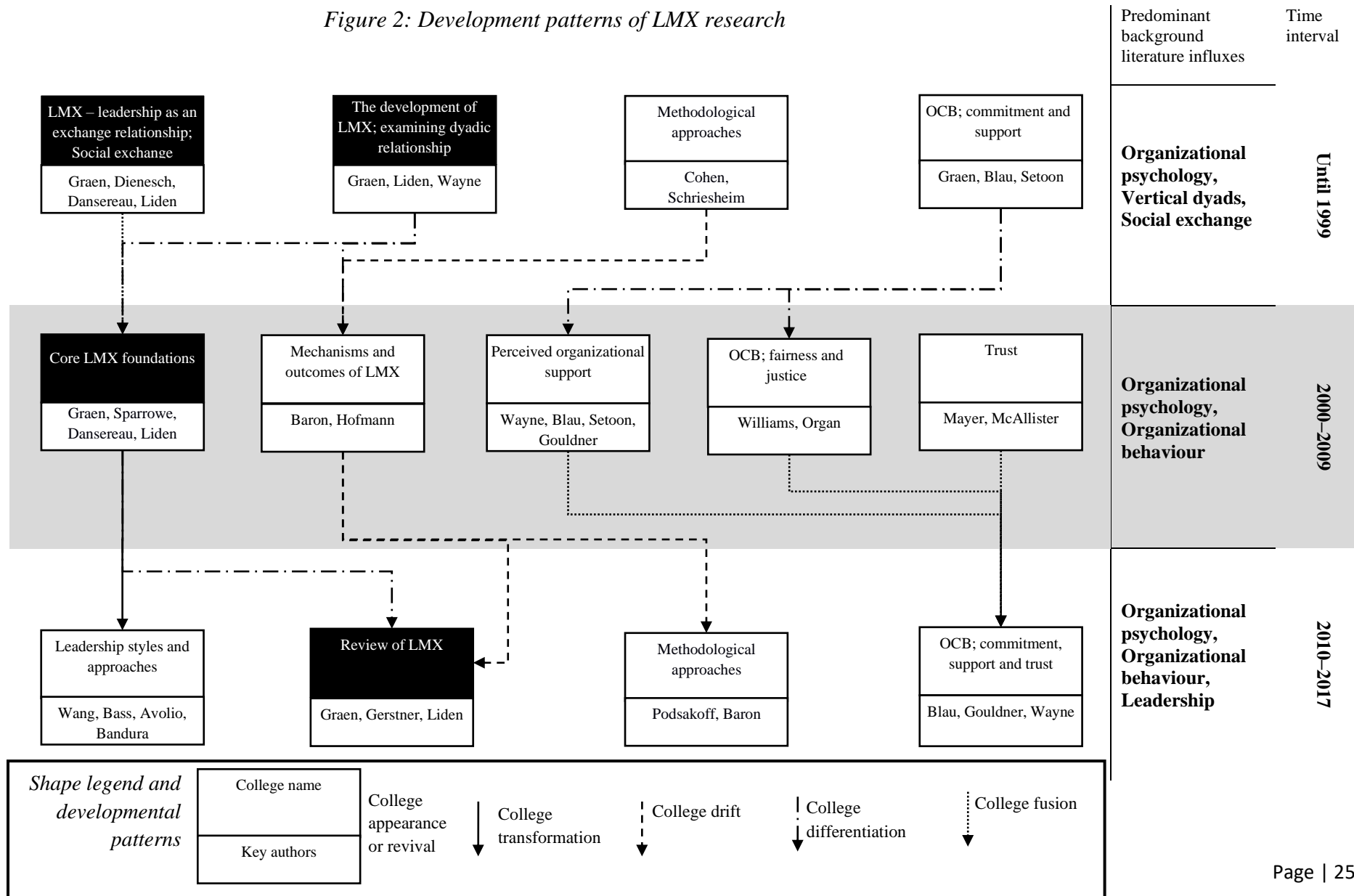
The second part of the literature review represents co-word analysis, where the output was a network of different themes that shape the field. The first period relates mostly with keywords such as "leadership", "management", "behaviour", "exchange" and "justice", which is not surprising considering the development of LMX, as its early stages started with examining supervisor–subordinate relationships and continued to approach leadership as an exchange relationship. In the last period more focus was on various leadership styles, organizational citizenship behaviour (OCB) and mechanisms that are associated with organizational outcomes. A peripheral, emerging cluster shows increasing interest of researchers in negative outcomes as a consequence of LMX. The top row shows network visualization, whereas the bottom row of the Figure 3 shows the density/heat map.

With bibliographic coupling in the third part the aim was to detect current trends and propose potential trajectories for future research. Since this approach is static, does not need citations to accumulate, we selected only last time frame (2010-2017). Analysis revealed two major clusters: Organizational justice, support, and commitment and Leadership styles and approaches. In particular, the period after the 2000s is marked by the rise of social exchange theory for examining reactions to justice. For the first time, creativity and innovation gained more attention from researchers in this field, focusing on how the leader–follower relationship are associated with employees' creative behaviour (Aarons & Sommerfeld, 2012). Results also reveal peripheral or emerging topics: safety climate and negative outcomes, abusive leadership, and ethics. Overall, findings of the first chapter offer a broader picture of LMX research and its position in management and leadership field. Figure 4 shows the density/heat map.

The contributions of this study are twofold. First, we complement existing and meta-analytic reviews of the LMX field. Second, this study adds to previous reviews by presenting the evolutionary development of LMX using a framework of invisible colleges (Vogel, 2012). Based on this methodology, we identified influxes that are in line with previous LMX reviews as well as previously discussed more-surprising findings. This suggests that LMX is extending due to its complexity and starting to look beyond its original theories and trying to incorporate various new views and theories (from leadership, HR, organizational behaviour, and general management literature) that could potentially provide a sounder perception of how LMX is associated with various organizational outcomes.

Figure 3: Co-word visualization for each time interval
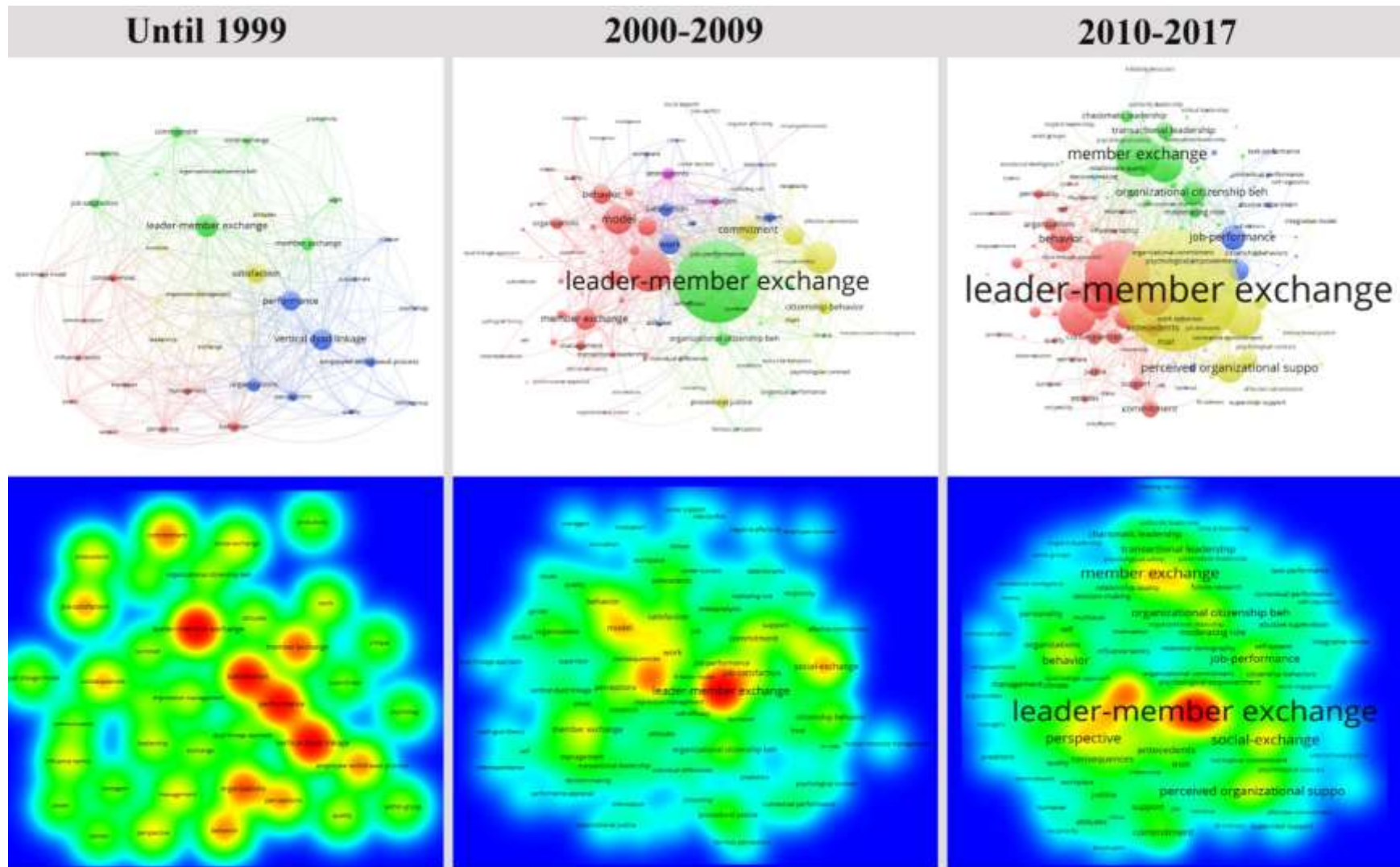
Figure 4: Bibliographic coupling for time interval 2010-2017
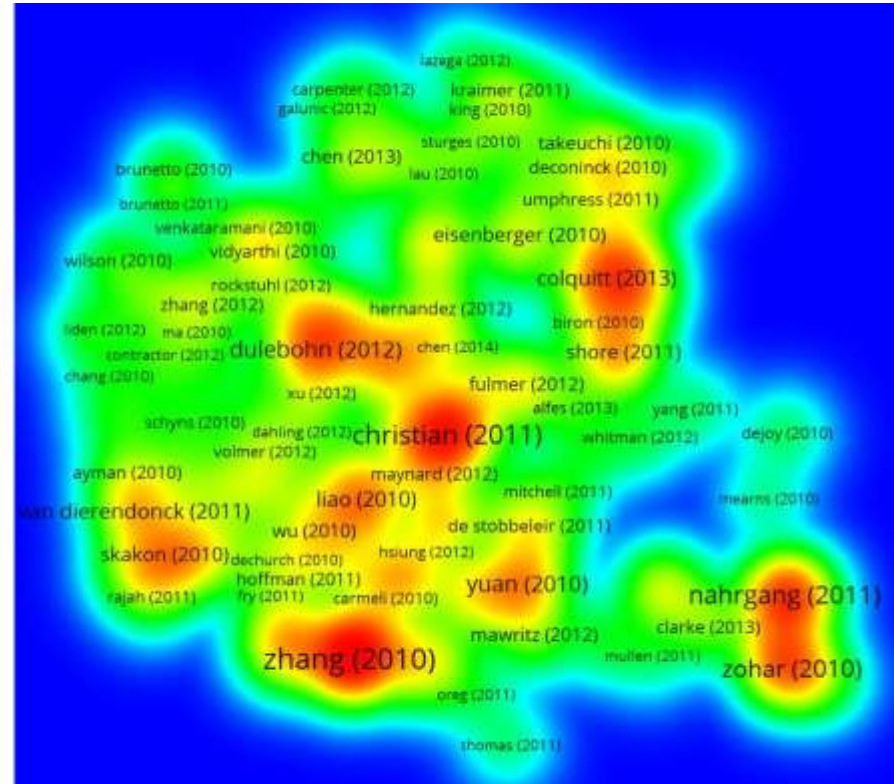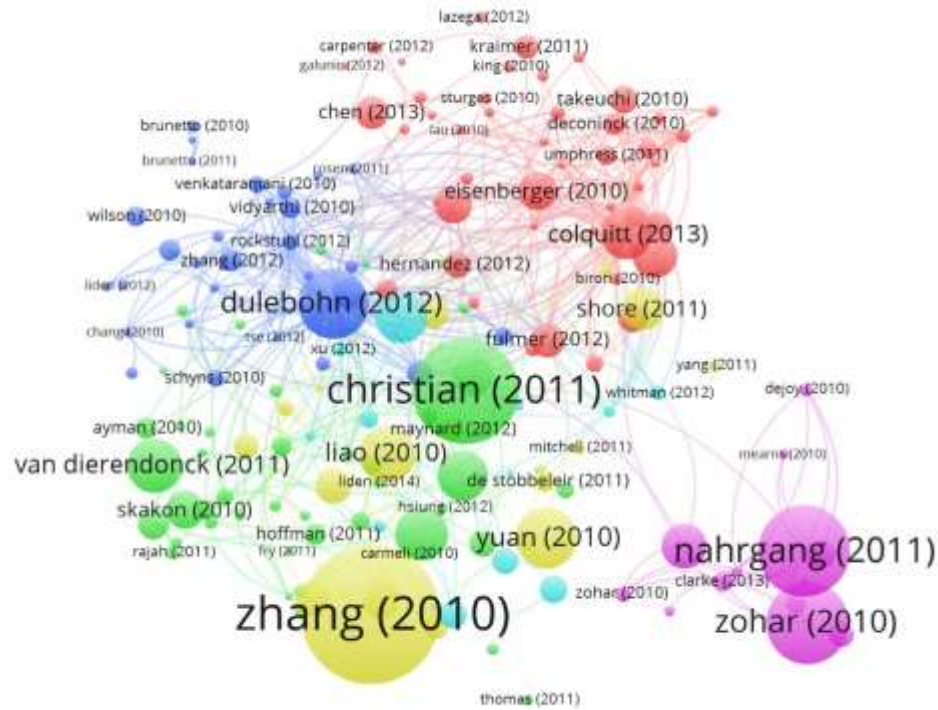
STUDY 2: The link between leader-member exchange, motivation to lead and counterproductive work behaviour

Literature overview suggests that the extant theoretical and empirical evidence is rooted in an individual-level approach, lagging behind other leadership domains (e.g. shared leadership). Drawing from social exchange theory that exchange process is two-sided, we included MTL from a leader's perspective and how it is related to CWB of individuals.

In Chapter 2, we investigate the interplay among LMX (SLMX and ELMX), MTL and CWB. Specifically, we examine cross-level effect of leaders' MTL on the relationship between SLMX/ELMX and CWB of individuals. We used hierarchical linear modeling (HLM) approach to test the following aspects: 1) the existence of a multilevel structure, 2) the cross-level effect of MTL at the leader level on SLMX/ELMX at the individual level, and 3) the moderation effects of MTL on the relationship between SLMX/ELMX and CWB. The dataset consisted of two hierarchically nested levels: 217 employees (level-1) nested within 31 groups (level-2). Results of hierarchical linear regression are presented in Table 1.

Results support our suggestion that individuals with higher levels of SLMX exhibit lower levels of CWB. Clearly, MTL is an important mechanism related to outcome behaviour. However, we observe that the relationship is more negative in cases of low MTL, thus our suggestion that the relationship between SLMX and CWB will be more negative at higher levels of MTL. Exchanges that go beyond economical and transactional relationships (i.e. SLMX) are related to higher levels of invested effort, satisfaction with a leader, mutual trust and respect (Ahmed, 2015; Aryee, Budhwar, & Chen, 2002). Also, results do not show support that relationship between ELMX and CWB exists, neither for moderation effect of MTL in the relationship between ELMX and CWB. Obviously, ELMX does not explicitly increase engagement in CWB, very likely this could be consistent with theorizing that contractual nature of economic exchange should be unrelated to the added value of organizational citizenship behaviour (OCB) (Organ, 1990).

Table 1: Results of the multilevel analysis with HLM

Dependent variable: Counterproductive Work Behaviour	Model 1		Model 2 (LMX direct)		Model 3 (MTL direct and interaction)	
	Fixed effects (SE)	***p***	**Fixed effects (SE)**	***p***	**Fixed effects (SE)**	***p***
Intercept	1.484 (.059)	< .001	2.042 (.556)	.001	2.177 (.585)	.001
Age			.025 (.018)	.180	.022 (.018)	.250
Gender			.033 (.124)	.791	.018 (.126)	.886
Education			-.105 (.050)	.047	-.107 (.049)	.041
Tenure of employment			-.034 (.019)	.091	-.032 (.019)	.113
ELMX			-.002 (.018)	.904	-.005 (.016)	.773
SLMX			-.068 (.028)	.019	-.077 (.028)	.007
MTL					.015 (.056)	.798
SLMX × MTL					.095 (.026)	< .001
ELMX × MTL					-.019 (.018)	.297
Pseudo R^2			.352		.345	
Deviance	264.865		211.431		221.195	

Note. N = 217 (individual level), 31 (leader level). We report overall pseudo R^2, estimates are based on proportional reduction of Level 1 and Level 2 errors owed to predictions in the model (Snijders & Bosker, 1999).

Two-way interaction presented in Figure 5 shows that there is more CWB under conditions of low MTL and SLMX. Although results show that moderation exists, the two-way interaction plot revealed unexpected levels of CWB, suggesting that followers engage in pretty much the same levels of CWB as a result of SLMX when they have a leader that is motivated to lead. This suggests that there may be two alternative routes to dealing with CWB in organizations, either develop SLMX relationships or recruit leaders motivated to lead. In this case we can take into account that there is a wide variety of organizational, individual and task characteristics that can work as substitutes to enhance or diminish leader's influence on employee behaviour (Kerr & Jermier, 1978). Since followers react differently on the levels of LMX in interpersonal relationships (Fernet, Gagné, & Austin, 2010), they might substitute leader's MTL and their intentions to influence employee behaviour with their own. Therefore, organizations should consider individuals' MTL and their fit or misfit within assigned job roles, create environment and adapt HR systems and practices that enable development through informal events.

Figure 5: Two-way interaction effect of MTL and SLMX on counterproductive work behaviour
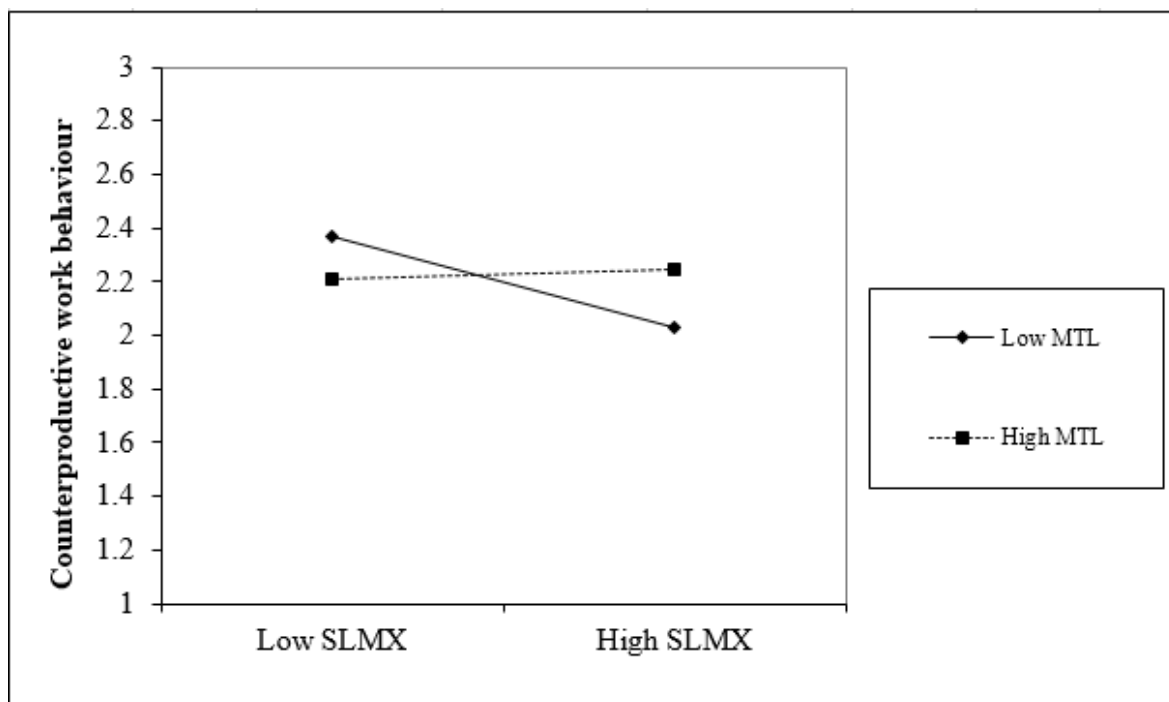
The second chapter attempts to extend knowledge on MTL and its application to leadership field. Although meta analyses demonstrate that transactional LMX relationships are negatively related to most outcomes under the assumption that high LMX represent social exchange relationships, whereas low LMX represent economic exchange relationships (Howell & Hall-Merenda, 1999; Wang, Law, Hackett, Wang, & Chen, 2005), our study actually demonstrates that economic exchange relationships do not necessarily result in bad outcomes. This aligns well with the transactional leadership literature (Bass, Avolio, Jung, & Berson, 2003; Judge & Piccolo, 2004).

However, in light of research demonstrating negative relationships between ELMX and productive employee motivation and outcomes (e.g., Buch, Kuvaas, Dysvik, & Schyns, 2014), we would not recommend developing ELMX relationships with followers. Therefore, our study

contributes to existing body of literature on LMX and CWB as well as providing an alternative view on the LMX relationship between leaders and followers, where we focus on two relationships with different qualities such as ELMX and SLMX (Kuvaas et al., 2012).

Although literature suggests that individual differences are important determinants of employee behaviour (Organ & Konovsky, 1989; Spector & Fox, 2002), there is rather scant research on MTL in a workplace setting and especially its role as a mechanism that can help explain outcome behaviour. More importantly, MTL as a construct is relatively under-investigated, thus present study is a further step in gathering empirical evidence (Chan & Drasgow, 2001).

Finally, this study contributes to methodological approaches used in leadership domain, related to the multi-level nature of the proposed model with a two-source examination (leader vs. follower perspective). Leadership and its complexity goes beyond leader perspective and it is necessary to employ multi-level approach to ensure the growth of a scientific field across leadership domains (Day & Harrison, 2007).

STUDY 3: The interplay among leader-member exchange, leadership attachment styles, psychological safety and counterproductive work behaviour

In Chapter 3, we examine the concept of adult attachment in a workplace setting and how it is associated with the relationship between LMX and CWB. Additionally, we integrate psychological safety as a mediator between LMX and CWB. The proposed relationships were tested through a field study conducted in three large EU companies with a total sample size of 257 employees (the same sample as in Chapter 2). To examine moderation and mediation effects, we applied regression analysis in SPSS using moderated-mediation model with PROCESS macro, which is also referred as conditional process modelling (Bolin, 2014; Hayes, 2012).

The proposed study offers insight into how different attachment styles are associated with the link between LMX and CWB, mediated by psychological safety. First, results support our suggestion that psychological safety mediates the relationship between LMX and CWB. Second, including attachment styles in the model as moderators, results show that lower levels of avoidant attachment in interaction with higher levels of LMX result in more psychological safety (Figure 6). Additionally, the relationship between LMX and CWB mediated by psychological safety will be downward adjusted when the follower experiences avoidant type of attachment. Furthermore, avoidantly attached individuals are perceived as very insensitive and uncaring, also ignoring their own as well as others' needs, leading to poorer performance (Keller, 2003) and lower efficacy (Leiter, Day, & Price, 2015).

Figure 6: Two-way interaction effect with simple slopes of avoidant attachment and LMX on psychological safety
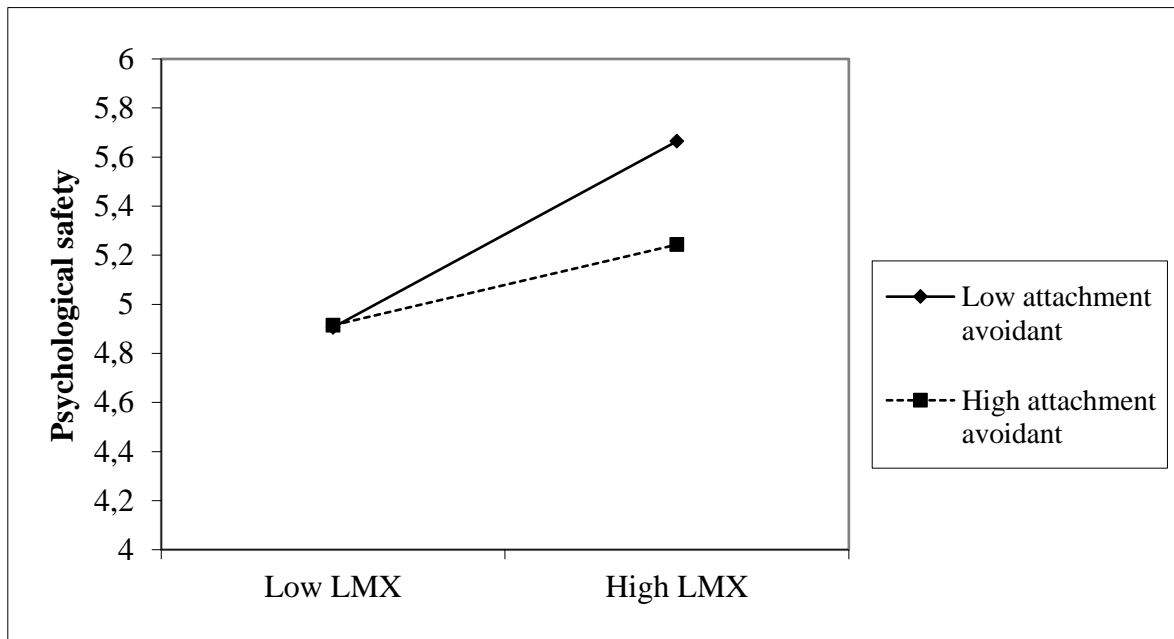
Similarly, as shown in Figure 7, in cases of lower anxious attachment in interaction with higher LMX there is more psychological safety, which in this case intervenes to less CWB. Anxiously attached individuals are more likely to be involved in social interactions, but avoid conflicting situations because they seek support for their beliefs, even if those are negative (Leiter et al., 2015). Therefore, their perception of psychological safety will be lower, which increases the likelihood for incivility or engagement in CWBs.

Based on the analysis, there is no empirical support for our suggestion that secure attachment has a moderating effect on the relationship between LMX and CWB, which is mediated by psychological safety. This could be due to perceived similarity between LMX and secure attachment, as in both cases constructs are related to exhibiting trust and empathy (Mayseless, 2010) leading to superior effectiveness.

Contributions of this study are twofold. First contribution refers to the psychological safety as a key explanatory mechanism for manifestation of CWBs. With high LMX relationships individuals have greater ability for communicating larger spectrum of emotions, are open for new ideas and information, relationships are more flexible, show appreciation and value toward self and others (Carmeli, Brueller, & Dutton, 2009). Therefore, we expect that higher LMX is an enabler of psychological safety, through which outcome behaviour among organizational members is manifested, resulting in less engagement in CWBs.

Second contribution is to extend the conceptualization of adult attachment to the LMX research. Leaders as attachment figures form emotional relationships with their followers, which is analogous to parental relationship (Popper & Mayseless, 2003). Applying such conceptualization can help us to better understand the dyadic relationships between leaders and followers by accounting for interpersonal conceptions about oneself and others simultaneously (Černe et al., 2018; Popper et al., 2000). In the workplace social interactions psychological safety reflects the relationships among employees, their approach about how they perceive them and the propensity to build and maintain these relationships according to the attachment style of an individual (Leiter et al., 2015). Therefore, the interaction of attachment and LMX is transmitted through perceived psychological safety onto CWB engagement.

Our study suggests that there are two potential practical implications. First, organizations should encourage LMX development through different training programs, mentorships and informal social interactions, which would build psychological safety of individuals and consequently reduce the possibility of CWB enactment. Leaders should also take into consideration that employees interpretation of social relationships might differ from those of leaders or others (Leiter et al., 2015).

Second, offering different types of support, such as informational and emotional (Richards & Schat, 2011), may encourage employees to voluntary seek assistance and advice when they need it. Specifically, individuals with anxious or avoidant attachment may need more guidance in relationship development and encouragement to invest more effort in relationship building to achieve higher LMX. Moreover, leaders should also take into consideration that relationship development is a process that needs time and unfolds more slowly (Graen & Uhl-Bien, 1995; Maslyn et al., 2017).

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THIRD AWARD

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The Effects of Retail Deterrence on Consumer-Brand Relationships: Testing a Model of The Deterrence Boomerang Effect.

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Abstract

The present research aims to study the antecedents that form customers´ attitudes towards deterrent security methods used at stores and determine whether these attitudes could harm the customer-brand relationship. By analyzing a set of data (434 customers at two major retailers in Peru) using Partial Least Squares Structural Equation modelling, the results conclude that consumer´s attitudes toward store´s deterrent techniques are formed by four components: Privacy Concerns, Negative Experiences, Perceived Effectiveness and Perceived Legitimacy. It is also concluded that Attitudes towards deterrence methods has a significant impact on Consumer Loyalty and Complaining Intentions. In addition, our results provide managerial insights on how companies could improve their approaches to dealing with consumer misbehaviour at Marketplace.

Introduction

In October 2007, Mrs Morveri was charged with stealing store products at METRO, the biggest supermarket chain in Peru. When she was leaving the store, security sensors, located in one of the gates, activated and triggered an alarm. She was immediately taken over by security personnel and a policeman who provided private services to the store. She was kept against her will, ordered to enter a small room, and forced to take off her clothes in order to look for articles that allegedly she had stolen. But they found none. She was blamed, humiliated, and vexed. Finally, an embarrassed store manager offered her a voucher for use in the cafeteria of the establishment. She did not accept. She sued the supermarket chain, and she won[3]. But even more, this story reached the mass media and generated a wave of criticism and scrutiny towards METRO and its security and surveillance practices within its stores.

This situation is a typical example of what Fullerton and Punj (1997) called the "*Deterrence Boomerang Effect*". Thus, these authors suggested that strict security measures used by the retail industry to combat shoppers´ unethical behavior (e.g. shoplifting, verbal abuse of

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[3] Source: El Comercio Newspaper. Lima - Peru. March 05, 2011

employees) could be offending honest customers and, when these stories reach the mass media, they could be damaging to the reputation of the brand.

Literature Review

Consumer misbehavior

Researchers have used a wide range of labels and definitions for this type of behaviour. Mills and Bonona (1979) defined "*deviant consumer behaviour*" like behaviour in a retail store that society considers inappropriate or in conflict with a previously accepted societal norm. Fullerton and Punj (1993) defined "*aberrant consumer behaviour*" as behaviour that violates the generally accepted norms of consumer behaviour in exchange settings. Harris et al. (2003) coined the term "*dysfunctional customer behaviour*". This term refers to actions by customers who intentionally or unintentionally, overtly or covertly act in a manner that, in some way, disrupts otherwise functional service encounters. More recently, Fisk et al. (2010), in a review of the state of the art of Consumer Misbehaviour, identified a variety of divergent labels that reflect the diversity of perspectives and positions to explore this phenomenon. Some of these labels are *inappropriate behaviour*, *non-normative behaviour*, *abnormal behaviour*, *badness behaviour*, *unethical behaviou*r, and *unfair behaviour.*

This research will employ the term consumer misbehaviour (from now on CMB) with the approach suggested by Fullerton and Punj (1997b). Thus, consumer misbehaviour is defined as *behavioral acts by customers who violate the generally accepted norms of conduct in consumption situations and disrupt the order expected in such situations*. Some kinds of CMB reported in previous literature include: fraudulent returning (Harris, 2008), purchasing illicit goods (Albers-Miller, 1999), Shoplifting (Tonglet, 2002), Exhibitionism at store (Fullerton et al., 1997), Price tag switching (Cole, 1989) and Cheating on service guarantees (Wirtz et al. 2004).

The consequences of Consumer misbehaviour

CMB affects companies at three dimensions: the financial outcomes, the impact on employees, and the impact on other customers. The impact of CMB on financial outcomes is severe in the bottom line of companies. In 2007, the theft (one form of CMB) cost American retailers USD 35.7 billion. The same figure is USD 48.9 billion by 2017[4]. In The UK retail industry, the Retail Crime Survey report that retail crime cost UK retailers 1.4 billion pounds in 2011 (the equivalent to 130,000 full-time retail jobs). Moreover, several authors have reported the damage of CMB to employees´ morale which could have severe psychological effects on front desk personnel. For example, Fisk et al. (2010) reveal that frontline US retail assistants are subjected to verbal abuse once every 3.75 days, to threatening acts every 15 days, and to violent behaviour every 31 days. And also Dormann et al. (2004) assessed the various forms of consumer-related social stressors for frontline employees and found evidence of a link between customer-related social stressors and employee burnout in which customer verbal aggression was one of the main predictors of burnout. Finally, some types of CMB such as verbal abuse of employees or physical violence against staff, negatively alter the atmosphere and experience of service for other consumers who witness such acts of aberrant behaviour. A high frequency of such actions at a specific store could raise concern among regular customers and even may drive them away from the store. Berry et al. (2008) argue that once customers

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[4] Money (2017) "Shoplifting and Other Fraud Cost Retailers Nearly $50 Billion Last Year

misbehave systematically and abuse of company policies (for example return policies) the companies are inclined to either toughen return policies or increasing prices to cover losses. In the end, well-behaved customers will be penalized by the action of other customers.

Deterrence as a control technique for consumer misbehavior.

In retail settings, the traditional response of the stores to fight CMB has been implementing a number of deterrent practices such as electronic alarms, guards, and surveillance cameras. This research define the term *Retail Deterrence* as the security measures or the deterrence policies implemented by retail companies to prevent, detect and deter dishonest consumer behavior in a store. Other labels for Retail Deterrence used by practitioners are Retail Security, Anti-theft solutions, loss prevention measures, detection systems or retail private security.

The Deterrence Theory states that people will be less likely to commit illegal acts if they perceive a high risk of being punished. Deterrence works at two levels: The certainty of the punishment and the severity of the punishment. By increasing the certainty of punishment the potential offenders may be deterred given the risk of being caught, and by increasing the severity of the punishment the likely offenders could conclude that the sanction is too severe and desist from engaging in criminal behaviour (Wright, 2010). Fullerton and Punj (1997) state that a goal of deterrence in the marketplace is to create some formal and informal sanctions in order to increase the perceived probability that Consumer misbehaviour will be detected and punished.

The deterrence paradox in retail settings.

The major criticisms of the Deterrence Theory as a control technique for CMB are based on the non-fulfilling of some theoretical assumptions about deterrence. For example, the premise of rational individuals who consider the consequences of their behaviour and accordingly decide to commit or not the crime is not met when the individual take irrational choices because of mental illness or influence of alcohol or drugs (Wright, 2010). Another problem with the assumptions is that people tend to underestimate the severity of the sanctions or is not aware of such penalties. Moreover, the assumption that pain is something to be avoided by a perpetrator cannot generally be applied with some people that may commit crimes because they want to be punished, or in some cases the challenge of punishment can be an invitation to engage with crime (for example some criminals are motivated by a desire to feel superior to "the system"). All the previous arguments and the criticism to the fulfilment of the assumptions of the Deterrence Theory, make that its application in the control of social behaviour remains questionable and unreliable.

In retail contexts where shoplifting or verbal abuse of employees are frequent offenses, Fullerton and Punj (1997) proposes a paradox of CMB control techniques based on deterrence: The increase in the certainty of being detected and punished through severe security measures could end up offending and driving away non-offensive consumers, instead of driving away real offenders. Fullerton and Punj labelled this paradox as The Deterrence boomerang effect. Thus, the problem with Retail deterrence is that although they are designed to deter dishonest consumers, they could end up annoying and offending to legitimate customers, who likely never will visit again those stores where they were annoyed or even humiliated. Even worst, they could disseminate their bad experiences to many of their acquaintances, or they may denounce

their stories in mass media or in online platforms with the consequent damage to brand store reputation.

The deterrence boomerang effect in existing literature.
Only three previous studies explicitly report some theoretical basis for the existence of Deterrence Boomerang Effect: Fullerton and Punj (1997) urged that "the cost of tradeoffs between controlling consumer misbehaviour and offending legitimate consumers" should be carefully explored. Tonglet (1999) Hypothesis that any increase in security measures at stores may deter honest consumers and consequently affect the revenue of the store, and Berry et al. (2008) suggest that companies should design their business practices for the vast majority of their customers (usually honest, fair and responsible) rather than for the unfair and dishonest minority of shoppers. Berry et al. (2008) warn that the big risk into fight CMB is to implement unnecessary and restrictive policies that disrespect or offend most customers.

Previous research that could provide empirical support for Deterrence Boomerang Effect is limited and dispersed. Although none of them directly tests this phenomenom, they do offer clues and empirical evidence of their possible existence. For example, Guffey et al. (1979) study reported that shopper´s found uncomfortable the dressing room checkers (35%), two-way mirrors (29%), CCTV systems(25%) and, most importantly, 29% of respondents indicated that some methods of prevention were offensive to them and 16% said that it could affect their store choice. Dawson (1993) study also found that erroneous electronic alarms at store gates cause that 70% of respondents would be upset, 86% would be embarrassed, 80% would be annoyed, and 40% would feel uncomfortable. Finally, Gabbidon et al. (2008) examine the Consumer Racial Profiling (CRP)[5] tactics used by security guards against black students in the USA. Their research revealed that 73% of the black students reported they had been a victim of CRP. Moreover, 55% of those who were racially profiled said not shop at the store again, and 84% share their experience with friends.

Research questions

This study aims to answer the Fullerton and Punj´s call for research and contribute to the body of knowledge about the Deterrence Boomerang Effect phenomenon. At a micro level (consumer) this research will investigate the potential impacts (attitudinal and behavioural) of Deterrent methods on regular consumers. This thesis suggests three areas of research: (1) At an attitudinal level: Understand what are the attitudes (positive and negative) of the consumer towards deterrence-based security measures, (2) At a behavioral level to understand whether, the use of deterrence-based security measures against consumers (honest or not) has an effect on their behaviour (or behavioural intentions) towards the brand, and (3) understand which are the mechanisms that intervene in the possible relationship between the attitude towards Retail Deterrence and behaviour (or behavioural intention)

More specifically, this research aims to answer the following research questions (RQs): RQ1: What are the determinants of consumer attitudes toward retail deterrence?; RQ2: Do the consumer´s attitudes toward retail deterrence harm the consumer-brand relationship?;

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[5] CRP is when store employees target a shopper for discriminatory treatment based on their race or ethnicity.

RQ3:What are the potential moderators or mediators variables that alleviate (or worsen) the impact of consumer´s attitudes toward retail deterrence on the customer-brand relationship?

Research Design and Research Model

This research adopts a positivistic paradigm and quantitative methodology. The research design is cross-sectional with survey methods using *the mall intercept method* as a data collection technique. The population to be studied in this research were shoppers of supermarkets in two major cities in Peru. A 440 cases sample was collected. The scales and measurement models were borrowed and adapted from prior research in retail security, consumer misbehaviour, and branding literature.

The thesis aims to develop and test a model of the determinants of Consumer´s attitudes toward Retail Deterrence and the impact of these attitudes on other consumer-brand relationship variables. The Theory of Reasoned Action (Fishbein and Ajzen, 2010) was the theoretical framework used to integrate all the antecedents and mediating constructs with the potential outcomes in one single research model. The Theory of Reasoned Action (TRA) is based on a long tradition of attitude-research, and it is especially useful for the study of the development of attitudes and behavioral intentions

The model specifically investigated five potential determinants for consumer attitudes´ toward retail deterrence (RD) (perceived discrimination, perceived efficacy, perceived legitimacy, privacy concerns and experiences), two potential effects of Retail deterrence on consumer-brand relationships (Complaining intentions and brand loyalty intentions) and two potential intervening variables (brand trust and brand commitment). The model also integrates two potential control variables suggested by the TRA framework: Consumer perceived norms, and Consumer perceived behavioural control. The model is shown in Figure 1.

Figure 1. The proposed Research Model.
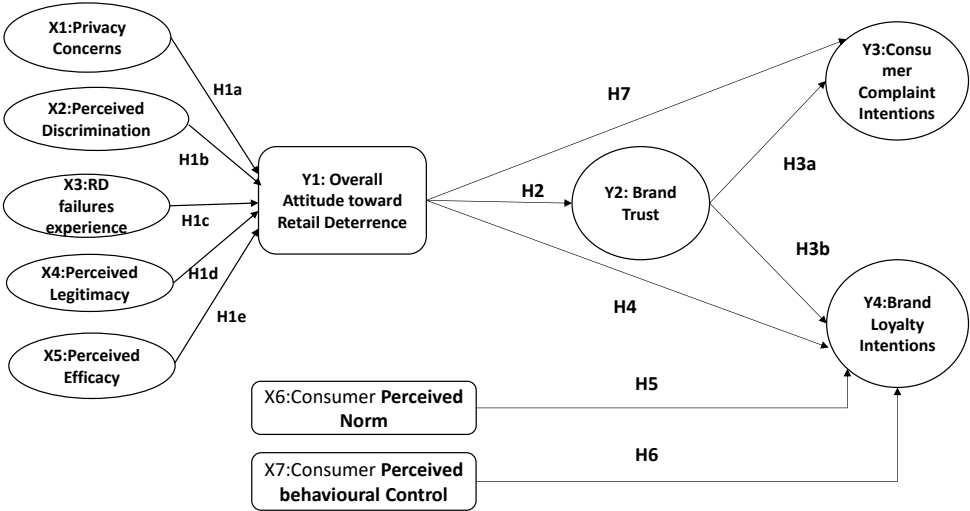
To test the model Structural Equation Modelling (SEM) was used, since this technique enables the researcher to test a series of relationships simultaneously. There are two types of SEM: covariance-based (CB-SEM) and partial least squares SEM (PLS-SEM). The PLS approach was chosen as a suitable technique for this research as it can model both formative and reflective measures. Hair et al. (2017) and Kline (2011) claim that attempts to model formative indicators with Covariace-based techniques present difficulties with statistical identification. Since our research model presents formative measurements for some constructs it is clear the PLS-SEM was the most appropriate technique.
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Model testing

The PLS-SEM analysis executed on the research model found support for 8 out of 12 hypotheses. The direction (sign) of the eight relationships that were found significant, was in line with expectations based on the previous literature (Table 1)

Table 1

	Sample Mean	Standard Deviation	t- Statistic	P Values
ATTITUDE →COMPLAIN	-0.3544	0.0477	7.4253	0.000
ATTITUDE → LOYALTY	-0.3541	0.0491	7.2143	0.000
ATTITUDE → TRUST	0.3267	0.043	7.5911	0.000
CONTROL → LOYALTY	0.1174	0.0446	2.6325	0.0087
DISCRIMINATION→ATTITUDE	0.0059	0.0496	0.1185	**0.9057**
EFFICACY →ATTITUDE	0.1975	0.0505	3.9127	0.0001
EXPERIENCE →ATTITUDE	-0.1928	0.0549	3.5087	0.0005
LEGITIMACY →ATTITUDE	0.3252	0.0458	7.102	0.000
PRIVACY → ATTITUDE	-0.0882	0.0518	1.7029	**0.0892**
SOCIAL→LOYALTY	-0.0357	0.0610	0.5859	**0.5582**
TRUST → COMPLAIN	-0.0582	0.0557	1.0455	**0.2963**
TRUST → LOYALTY	-0.1337	0.0536	2.4943	0.0129

Research findings

Following the main findings from each of the research questions:

Research question 1: What are the determinants of consumer attitudes toward retail deterrence?

A first empirical contribution of the model is that it identifies the determining factors in the formation of attitudes towards Retail Deterrence. So far, only two previous works have attempted to build a scale to measure the acceptance of security measures used by stores. But the scales of Guffey (1979) and Dawson (1993) were incomplete and had not been tested for

validity. The present study proposes a measurement model for Attitudes towards Retail Deterrence and explores the possible antecedents in the formation of these attitudes.

Privacy concerns and Negative experiences were found to have a negative impact on Attitudes whereas Perceived Legitimacy and Perceived Efficacy were found to have a positive effect on Attitude toward Retail Deterrence. The role of Perceived discrimination as a key antecedent of Attitude toward RD did not get statistical support. Moreover, an Importance-Performance analysis conducted on the data concluded that of all those antecedents, the Legitimacy component was significantly more important than the other antecedents. These findings highlight two important aspects of RQ1

The role of Perceived legitimacy

The study found empirical support for the variable Perceived Legitimacy as an antecedent of Attitudes toward Retail Deterrence. The direction of the relationship was positive, in line with expectations, meaning that the greater the perceived legitimacy, the better the attitude towards Retail Deterrence. The importance-performance analysis IMPA found that Perceived Legitimacy is the most important factor in the construction of Attitudes. This is in line with what is proposed by Mills et al. (1979) who suggest that eliminating the perceived differences in client-store power helps to improve the relationship with the brand. The discovery that Legitimacy is the most important factor in building positive attitudes towards security measures also suggests that control methods based on deterrence and intimidation may not be effective as these approaches undermine legitimacy. This is in line with Salem et al. (1970) who argued that the secondary role of deterrence (education and reinforcement) is more important than the primary role of intimidation. From a theoretical perspective, the study of legitimacy as a key component to build better attitudes towards RD and reduce the negative effects of DBE provides interesting perspectives to research.

Research Question 2: Do the consumer´s attitudes toward retail deterrence affect the consumer-brand relationship?

The main contribution of this research study is the answer to this research question. The definition of the Deterrence Boomerang Effect states that Retail Deterrence practices could affect the brand-consumer relationship. This study has found empirical evidence that negative attitudes toward Retail Deterrence lead to negative intentions towards the brand. Thus, it is concluded that Shopper´s Attitudes towards Retail Deterrence have a significant impact on consumer-brand relationships represented by Brand Loyalty Intentions. The direction of this link was in line with expectations (positive path coefficient[6]) meaning that a decrease in Attitude toward RD will lead to a reduction of Brand loyalty intentions. Also, it was confirmed that Attitudes toward retail deterrence have a significant impact on shopper Complaining Intentions (negative path coefficient) meaning that an increase in positive Attitudes toward Retail Deterrence will lead to a decrease in Complaining Intentions.

These findings answer a question that has long worried retailers who were willing to accept some level of shoplifting due to the potential cost of lost sales "arising from the departure of honest customers with aversion to security measures that assume universal guilt" (Banister, 1979). Two previous works have identified potential lost sales because of the DBE. The study of Guffey et al. (1979) found that up to 16% of customers would consider switching the store due to offensive preventive shoplifting devices. And the study of Gabiddon et al. (2008) found

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[6] In the original model, the path coefficient is negative(-0,35) because the scale for Loyalty is reversed.

that 55% of the customers who experienced severe anti-theft measures reported not to shop at the store again. The results of the present research are in the same direction as Guffey et al. (1979) and Gabbidon et al. (2008) results.

Research Question 3: What are the potential moderator or mediator variables that alleviate (or worse) the impact of consumer´s attitudes toward retail deterrence on the customer-brand relationship?

This research assessed two mediation processes to answer this question:

(1) Brand Trust mediates the relationship between Attitude toward Retail Deterrence and Complaining intentions (hypothesis H2, H3a, H7 in figure 1). Here, it was concluded that no empirical evidence supports a mediation effect of Brand Trust over the relationship between Attitudes and Complaining intentions.

(2) Brand Trust mediates the relationship between Attitude toward Retail Deterrence and Loyalty (hypothesis H3, H3b, H4). Here, it was concluded that there is empirical evidence that supports a complementary mediation effect of Brand Trust owner relations between Attitudes and Brand Loyalty Intentions. Complementary mediation is a type of partial mediation, and it suggests an incomplete theoretical framework. (Zhao et al., 2010) suggest that the mediator identified (Brand Trust) is consistent with the hypothesised theoretical framework, but the researcher should consider the likelihood of an omitted mediator. This result is in line with previous research where it has been found that trust is a key factor to develop a favourable attitude toward the brand, pay higher prices, or remain loyal and spread positive word-of-mouth (Chaudhuri et al., 2001; Garbarino et al.,1999). Then, it can be concluded that if strict Retail Deterrence practices are affecting the Brand Trust of the store, this could finally jeopardise the Loyalty.

Theoretical implications

The results of the present research provide empirical evidence that the Deterrence Boomerang Effect does exist. Thus, this research contributes to an additional topic of research in the Consumer Misbehaviour area.

The results of this research have implications for the adoption of the Theory of Deterrence as the theoretical basis of Retail security practices. The mere assumption that deterrence and intimidation increase the effectiveness of the Retail Deterrence practices should be reconsidered since this research has found that Perceived Legitimacy is the most important component in the formation of positive attitudes toward Retail Deterrence. Thus, the relationship between perceived intimidation and perceived legitimacy should be studied in various context and retail settings. For example, if higher levels of intimidation produce lower levels of perceived legitimacy toward RD, this may negative relationship may generate undesired effects.

Another theoretical implication is for the evaluation of the effectiveness of the retail deterrence methods. Usually, the assessment of the Retail Deterrence techniques is based solely on the effectiveness to achieve a significant reduction in the level of shoplifting. Most methodologies use experimental measures to estimate the decline of the shoplifting and compare it with the expenses of the loss prevention technique. However, these evaluations should also consider some adverse impacts due to the existence of a deterrence boomerang effect. That is, what are the possible collateral effects (unwanted) that result from the implementation of new or stricter

security measures. Evaluations should not be done only regarding reducing CMB events, but also exploring the undesirable effects on honest clients such as disloyalty intentions or negative word-of-mouth.

Managerial implications

An important consideration in the consumer misbehaviour field is the managerial practices used by practitioners to deal with dysfunctional customers (Fisk et al. (2010). These practices include training of employees, the design of processes and policies for dealing with dishonest consumers or even increasing the fairness perception attitudes of customers. The results of this research could inform practitioners about four specific managerial implications extracted from the results of the empirical assessment of the research Model:

(1) To improve attitudes toward retail security measures, managers should work on four particular areas: reduce the shopper´s privacy concerns, increase the efficacy and legitimacy perception of customers and minimise the negative service experience due to deterrent techniques at the store. Of all of those, Perceptions of Legitimacy of the deterrent practices are the most important. Managers could learn from the experiences of the police on how to achieve cooperation of people to combat crime in their communities. What the police have learned (Tyler et al., 2008) is that legitimacy helps in shaping the cooperation to fight crime and that the key antecedent to legitimacy is experiencing procedural justice (fairness in the procedure) during a personal encounter with the police. Thus, a fair and respectful procedure in retail security practices seems to be crucial to build legitimacy. Training of security and frontline staff to deliver friendly, fair and respectful treatment appears to be critical in achieving these results.

(2) Negative attitudes toward retail deterrence could negatively impact on Brand Loyalty intentions. However, the low R^2 value for the construct Loyalty would suggest that this impact would not be too severe. Indeed, descriptive analysis of Loyalty intentions items would indicate that 7,4% of customers would consider switch store because of a bad attitude toward retail deterrence. This could seem a small effect, but in an extremely competitive retail environment, with net margins of only about 2%, Keeping loyal to the largest number of consumers is a priority.

(3) Strengthening brand trust is a good way to protect brand loyalty against possible failures of the Retail Deterrence that end up offending legitimate customers. These variables act as shields, which protect the brand's loyalty against potential failures of the Retail Deterrence. This poses a difficult task for retail practitioners. How could they build brand loyalty in those honest customers who continue to visit the store despite the deterrent methods. Podtar et al. (2017) propose an alternative approach to the classic deterrent prevention measures. Their study found that enhancing the customer-supermarket relationship quality may influence the consumer´s intentions to engage with misbehaviour. Consumer education or educational campaigns are also alternative approaches to build brand trust (Fullerton and Punj, 1997 ; Hiew, 1981). Thus, Corporate social responsibility policies, educational campaigns, cause-related marketing activites and supermarket service quality are four components to build high quality customer-store relationships.

(4) Supermarket´s customers do not react in the same way to the retail deterrence. Thus, a multi group analysis found that young shoppers value more the Efficacy of retail security measures whereas adult shopper´s value more the legitimacy. Thus, retail practitioners interested in to build better attitudes of young consumers towards deterrent practices should give priority to demonstrate security measures´ effectiveness. But for adult or senior consumers, the legitimacy of security measures is the most valued argument. The results also shows that the impact of Deterrence boomerang effect is not the same across age (stronger in adult customers and weak in young people) or socio-economic background (stronger for medium-income shoppers versus affluent shoppers).

Conclusion

This sudy explored the Deterrence Boomerang Effect, a phenomenon hypothesised by Fullerton and Punj in 1997 and which has remained empirically unexplored. Empirical results of present research found support for the Deterrence Boomerang Effect for a specific context: Retail companies in a Latin American country (Peru).

The thesis provided a theoretical rationale for the model building, a relevant and sufficient data was collected, and rigorous quantitative analysis has been carried out. As a result, statistical support for the central hypothesis of this research was found: The Shopper´s negative attitudes toward Retail deterrence could harm the Brand loyalty intentions and increase the levels of Complaining Intentions. Also, four potential antecedents for Attitudes toward retail deterrence were identified: Privacy concerns, Negative experiences, Perceived Efficacy and Perceived Legitimacy. Of all these, it was found that Perceived Legitimacy had significant greater importance in building attitudes towards Retail Deterrence. Moreover, it was found that some relationships were not stable across the entire sample, but they varied across different customer segments features such as sex, age or socio-economic status.

Despite having obtained significant support for most of the hypotheses, the overall assessment of the model yields quality measures ranging from low to moderate, regarding the explanatory power and predictive relevance. The most likely reason is a lack of specification, which means that some critical variables could have been omitted in the model. Further research is needed to improve model specification, and new methodological approaches are necessary to confirm the current results. Finally, this research provides a theoretical framework through which the Deterrence Boomerang Effect model can be improved by adding new variables or new relationships to the model.

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DISTINGUISHED PAPERS

Territorial Management and Industrial Environmental Conflicts: In Quest of Biodiversity

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Abstract:

The issue of biodiversity is considered under its management and public policy viewpoints. After showing the concept's diversity (natural vs social sciences) eliciting confusion, 2 cases of controversial industrial projects affecting biodiversity are explored. Stakeholder's attitudes are studied (1,184 verbatim). One derives a model of attitudes based on 3 value systems related to human-nature interactions: Anthropocenic, Eco-pragmatic and Promethean. It is applied to the content of 33 in-depth interviews of decision-makers at the forefront of the conflicts. Among findings, beyond vested interests are value-systems deeply at work and explain difficulties in settling conflicts. We infer some managerial recommendations to cope with such conflicts.

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1 - Introduction and research questions

Biodiversity is becoming a key issue in the agendas of global environmental policies. However, in spite of several worldwide alarming reports it has not yet received as much attention nor elicited as many debates as climate change (CC) in the circles of political and managerial decision-makers. Indeed, the role of the Intergovernmental Panel on Climate Change (IPCC), created by a UN resolution in 1988, has been key in the global awareness of the consequences of human activity on the Earth's average temperature and the ensuing effects. By contrast the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), paralleling IPPC for biodiversity, was only established in 2012 by ninety-four governments under the patronage of UNEP (Beck et *al.,* 2014). Its reports and policy recommendations are therefore less known among the public and private decision-makers. Moreover the debate on biodiversity is often confused with that on climate change, leading to mismatch policies (Mazor *et al.,* 2018). If indeed the preoccupying effects of climate change on biodiversity are well-documented, conversely in a virtuous "carbon neutral" world many biodiversity issues would persist because their causes are independent of CC: changes in land and sea use, fragmentation of habitats, direct exploitation of organisms, pollution, invasive alien species by transportation… All these factors generate a potential "biodiversity change" (BC), which will affect all living-beings and their interactions, affecting in particular the many ecosystem services that humans are dependable on.

The thesis intends to assess biodiversity treatment in territorial management decisions in connection with industrial activities. We draw on the most recent knowledge on biodiversity threats and decline (e.g. Ceballos *et al.,* 2017). We confront this knowledge with managerial practices in situation of conflicts which reveal the values (in the sense of Dewey) and interests of multiple stakeholders (Bozeman, 2007; Moore, 1995, 2012; Nabatachi, 2010, 2012).

We have chosen situations of environmental conflict in which the concern for biodiversity is high for a significant subset of stakeholders (Naess, 1973; Norton, 1986; Callicot, 1987; Dietz et al., 1989; Dietz & Stern, 1998; Norgaard et *al.,* 1998).

These conflicts are situated on territories where biodiversity is active, accessible, and observable and therefore might be affected by the decision-makers in controversial industrial activities.

In such conflicts the stakeholders' positions tend to be publicly expressed and exacerbated because the usual procedures of resolution seem impotent, often after several years, to reach a settlement of the dispute. This duration allows public expression of values, attitudes, and intentions of the various stakeholders. Such conflicts lead therefore to the production of dense qualitative and quantitative data which we have relied on in this research.

We conduct an inductive approach with the comprehensive study of two cases of related conflicts, allowing comparisons and therefore providing a better understanding of each of them, and leading to a theoretical modeling.

The first part of the dissertation (roughly 150 pages), briefly summarized here, is devoted to the most updated synthesized knowledge on biodiversity itself. The second part provides a comprehensive examination of two cases, leading to infer some theoretical propositions about the underlying motives of decisions bearing on industrial activities, with distinct impacts on marine or terrestrial biodiversity.

The third part is an analysis of the relationship between managerial constraints and biodiversity in the positions and decisions of top decision-makers involved in the two cases. Finally, we draw conclusions for management and suggested contribution to management science through this type of study.

2 - Biodiversity

The definition of biodiversity and its many facets have been object of a voluminous literature worldwide in scientific journals, surveyed in regularly issued international reports about the evolution of species and ecosystems (e.g. IUCN, Global Biodiversity Outlooks). The academic literature is produced by Earth and life scientists and social scientists. Depending on whether one looks at biodiversity from either point view, one

has complementary but also contradictory views. We summarize in **table 1** some differences in those streams of literature with a representation **(Mental map)**.

So, biodiversity is a macro-concept handled by a variety of stakeholders: (researchers, private or public organizations, social institutions…). Quite often, "biodiversity" in particular in the Mediterranean area[7] is regarded under the angle of the "threats" of extinction of species (Wilson & Peters, 1988; Wilson, 2005; Takacs, 1996). Expressed in a scientific rhetoric of numbers (McCloskey, 1986), biodiversity often enters the public sphere with counting of losses in generally emblematic species. In this part of the dissertation we show how this approach and management by numbers (Hood, 2007, 2012) brings biodiversity into a controversial status, lacking institutionalization (i.e. lack of authorities and jurisdictions to regulate it, absence of common knowledge and conventions) and therefore generating more discord than consensus. The use of such a multidimensional concept by each group of stakeholders is selective and versatile. This leaves room for a "diversity" of mental representations of biodiversity, often adorned with emblematic features borrowed from the myths of nature. Biodiversity can be quickly and widely invoked in the environmental disputes that burst all around the world. Thus private and public decision-makers are often in disarray to make rational and uncontroversial decisions about it (Nutt, 2000, 2006).

As it has been the case earlier for climate change, there is an emerging field in management research on dealing with biodiversity focusing on how policy and management decisions integrate it. The dissertation aims at contributing to it.

Table 1: Summary of the theories mobilized for the analysis of the definitions and dimensions of biodiversity (natural sciences vs. social sciences).

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[7] The Mediterranean region is recorded as one of the 35 « hotspot of biodiversity" because of its richness of species and ecosystems, especially threatened by anthropic activity.

Dimensions		Natural sciences		Social sciences	Main mobilized stream of thought
			x Presence vs. / Absence		
Biological diversity	x	Variety of the living-beings at all levels of the organization, in particular the intra-specific variation. (within the same species)	x	Diversity refers to broader types of life diversity pertaining to social constructions, norms of action, evolving capacities, preservation, transmission; the state of threatened biodiversity, the ambiguous nature of scientific units and assemblies (species, ecosystems, etc.).	**Theory of ecosystem services**, approaching nature through the services and benefits it provides to mankind (Costanza *et al.,* 1997; Daily, 1997; MEA, 2005; Balmford *et al.*, 2011; De Groot *et al.,* 2012)
Hierarchical organization	x	Biological organization at different levels: genetic, intra species, functional and eco-systemic.	x	Scientific constructs to model "social" relationships among individuals within a species and the social organization of interrelated species. Models are multiple and source of many controversies (e.g. around the concept of species itself).	
Scope of investigation	x	All concrete living-beings, and their relationships within ecosystems, most often excluding Man as a species but looking at him as driver of change or perturbation	x	Approaching biodiversity through abstract categories of conventional objects of Man's perceptions of nature's amenities or evils: fauna and flora, natural milieus, areas of ecological value, landscapes composition, natural risks origin, invasive species, …	
Preservation motives	x	Essentially ecological motives	x	Ecological, scientific, economical, landscape, aesthetical motives …	
Economic valuation	/	Not considered or often rejected	x	Biodiversity is a cornucopia and its ingredients should be economically valued.	
Forms of the object definition	x	Abstract definition or no general definition	x	No stable vision of biodiversity and its role in social life: oscillation between the economic vision and the cultural or symbolic vision.	**Theories of controversial universes** (Godard, 1992, 1993)
Interactions	x	Intra and inter-species interactions and the determining role of abiotic and biotic factors.	x	Negative interactions between humans and biodiversity (destructive relationships between humans and nature) requiring protective measures (Convention on biological diversity 1992, and other conventions to curb biodiversity losses)	**Theory of the Anthropocene** (Bonneuil, 2015 ; Crutzen, 2002 ; Steffen *et al.* 2011 ; Hamilton 2016) **Economies of worth** (Boltanski & Thevenot, 1997; Godard, 1990; Vivien, 2005) **Environmental ethic models** (Afeissa 2007; Batavia & Nelson, 2017; Korsgaard, 1983; Larrère 2010)
Preservation motives	x	Essentially ecological motives	x	For ecological, scientific, economical, landscape/urbanistic, aesthetical motives …	
Evolutionary patterns	x	Darwinian models for species emergence or extinction	x	Focus on today evolution driven by Man-nature relationships: (e.g. divergence with natural scientists on the content of the "sixth extinction)	
Main worries	/	Preservation per se	x	Global quest for "institutionalization" of biodiversity facing threats of excessive exploitation in a competition of individual an societies for natural resources	
Claims	/	Preservation per se	x	Biodiversity as a remarkable media object: the symbolic and emblematic contents are put forward by the institutional stakeholders (NGO, associations, politicians). Biodiversity I a spearhead of certain environmental disputes.	
Future generations	/	Preservation per se	x	Biodiversity is a common mankind heritage (assets) to be transmitted from a generation to the next, or borrowed from descendants and to be redeemed	
Use of biodiversity as argument in disputes	/	Biodiversity threats as a way to attract more funds for research		Stakeholders can mobilize biodiversity as a weapon with primarily economic, political and social interests. Biodiversity issues can also be used to support green or nature-based businesses.	

Mental map of biodiversity

Life & Earth scientists

- 01 Biological diversity
- 02 Hierarchical organization
- 03 Biological wholeness
- 04 Interaction product
- 05 Evolution product
- 06 Fuzzy object

Social science scientists

- 07 Preservation object
- 08 Object of concern
- 09 Object of claims
- 10 Future generations (heritage)
- 11 Economic object
- 12 Threat

The map of biodiversity is a purely theoretical representation of mental representations taken from the definitions of scientists in life and earth sciences (figure on the left), and scientists in human and social sciences (figure on the right), of which we have a total of 12 dimensions represented in the legend by colour coding. This representation thus shows a greater variety of dimensions mobilized among social scientists (12 dimensions are mobilized), than among life and earth scientists (7 dimensions are mobilized). The size of these virtual dimensional territories indicates in a way the importance (here the frequency) of these dimensions. For example, the "preservation" dimension appears to be more important in the territory of the social sciences. Or that future generations are absent from the territory of life and earth sciences.

3 - The cases

Our research is case-based with an interdisciplinary approach relying on theoretical sources both in natural and social sciences. We use a mixture of qualitative approaches (verbatim analysis, discourse analysis of long interviews, expert judgment for categorization) and quantitative (statistics of large sample and variance analysis with factor correspondence).

The research is about two plants, both located in a town (20,000 inhabitants) within a wide metropolitan area (1,500,000 people). The local social culture has been wrought out by intensive coal extraction during the last two centuries and ending in 2003. After this date the city has evolved towards a metropolitan residential area with people working essentially elsewhere, but living in the neighborhood of these two huge plants.

The first case is an alumina plant, the oldest in the world pioneering in 1893 the Bayer technology today universal. As of 1967, the firm has rejected its wastes (called "red muds") via a 57 km long pipeline in the sea, deep in a submarine canyon located 7 km

off the shore (Dauvin, 2010). However, by the end of 2015, the regulations resulting from the Barcelona Convention (1976) committed the plant to stop dumping the red muds, but the firm asked and obtained derogation from the State authorities to keep rejecting the excess water, though still containing some pollutants in excess of legal norms. The outfall of the pipe is located in the middle of the wide marine area of a new National Park established in 2012 (Deboudt, 2012) and whose mission includes the follow-up of marine biodiversity.

As an alternative to sea dumping, the firm started in 2016 a new process for drying the wastes and storing them in the vicinity of the plant, but with new nuisances for the nearby town residents.

The second case concerns the conversion of a coal-fired power unit to a solid biomass-fired one, launched after a national tender call of the energy transition program of the National Commission of Energy (2010), in line with European commitments. This unit depends on the regular provision of enormous volumes of wood supplied by local and distant forests, including European and overseas imports. The use of forest resources is never welcomed by those who invoke the role of forests as havens of biodiversity and CO_2 absorbers, whereas it is recommended by those who see wood energy as a virtuous alternative to coal and nuclear power.

The proximity of coal mining explains the parallel fate of the two plants during the 20th century: alumina processing required much energy provided by the power plant. However, in anticipation of the closure of the mine in 2003, coal was entirely imported as of the 2000s from Africa, Russia, and South America. There is an abundant literature on both plants by historians (Boullet, 2000; Daumalin *et al.*, 2005; Loison & Pezet, 2006).

The conflicts

Both cases have triggered tough environmental conflicts between 2012 and 2019. Biodiversity was a major stake but also accompanied by political, economic, social, and corporate interests such as jobs preservation, local pollution in the town, pollution in the marine area of the National Park affecting tourism and fisheries, national strategies

in energy and advanced industrial activities. So, both the erection of a biomass-fired unit and the rejection of polluted water 320 m deep in the National Park have generated supports and oppositions from a variety of stakeholders. The dispute has received strong national echo, showing disagreement at the very level of the Government Cabinet. Several prominent people took part in the dispute, widely mediatized: the Prime-Minister, the Minister of environment, the Park managers, the leaders of NGOs, associations, professional organizations, local municipalities, and the industrialists. To calm the alumina dispute, the Prefect (regional representative of the central government) had accompanied the authorization with the creation of two committees: one inviting representatives of stakeholders for regular follow-up meetings about the wastes both on the storage site in the town and on the marine area; the other committee is composed by twelve scientists in charge of reporting on the evolution of the pollution in the marine Park.

The interest of those cases is that they addressed different compartments of biodiversity: marine areas for the alumina case, continental forests for the biomass case.

The two cases also offer another distinctive feature: alumina firm is a private company supplying international markets of refined alumina (called specialties alumina) used in high-tech applications such as mobile phones or automobile industry. After being a subsidiary of large international groups the alumina plant is today the property of a small French company in the portfolio of a US investment fund, which displeased certain stakeholders. The power plant was owned by a subsidiary of a big EU energy supplier, benefiting a (subsidized) government contract for serving regulated markets of electricity in the South of France but exports also abroad.

4 - Stakeholders attitudes: statistical analysis

Stakeholders are defined as individuals or organizations that declare themselves for some reason significantly affected by the project or who have to make direct decisions about.

To explore the motives of the stakeholders a first set of data has been collected between 2010 and 2016. They come from systematic recording, for each conflict, of the leading

stakeholder positions and opinions expressed in press, radio, TV, social networks, websites, reports, company releases, public inquiries etc. The treatment of these materials has allowed setting a database of 1,184 pieces of verbatim (491 for Biomass and 693 for Alumina), together with addition information about the speaker according to categories provided in the literature (Carroll, 1989; Savage et al., 1991; Clarkson, 1995 ; Mintzberg, 2015; Lépineux 2005; Marquet-Pondeville, 2003), and their attitudes toward the project ensuing from their declarations or actions. Attitude is pointed on a five point Likert scale (strong support, weak support, neutral, weak opposition, strong opposition).

We present thereafter some stylized facts using factor correspondence analysis for both cases. The significance is very high (Khi square and F1+F2 variance). One gets reliable representations of how categories of stakeholders position themselves toward the projects.

The distribution of opinions along the five attitudes (not detailed here) is strongly U-curved, meaning that extreme positions are more frequent than middle ones. This is a clear mark of exacerbated conflicts, thus expecting dialogue to be difficult among the stakeholders.

Fig 1 - Alumina plant: stakeholder attitudes and clusters
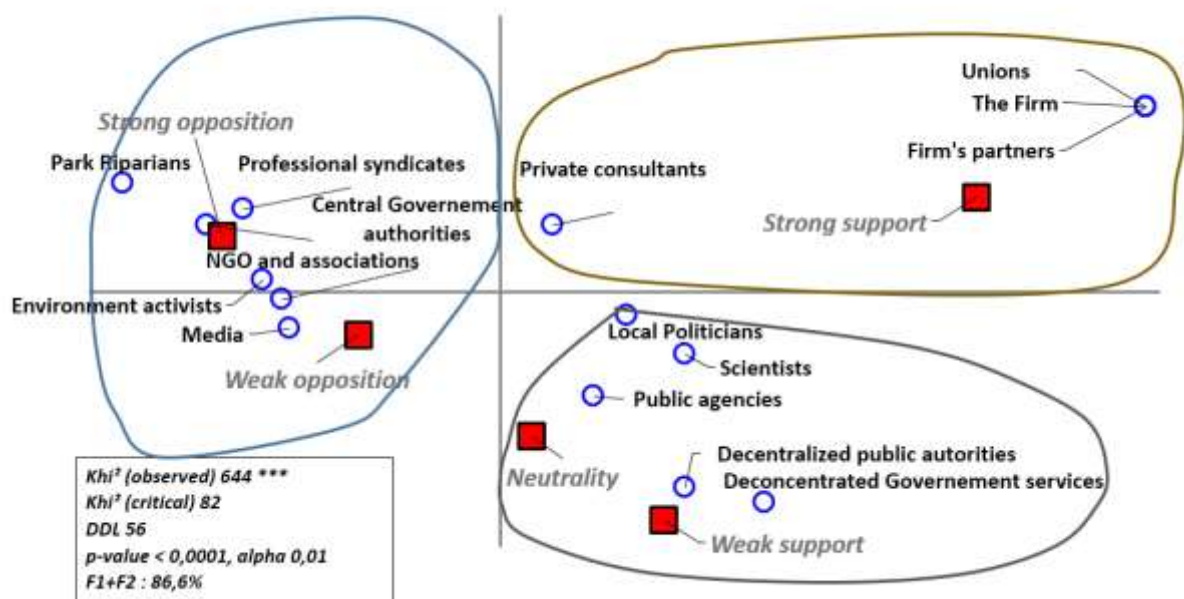
Fig 2 -Biomass plant: stakeholders and attitudes

Khi² = 205,
Khi² critical = 43,
DDL = 24, p-value < 0,0001
alpha 0,01
F1+F2 = 84,5%:
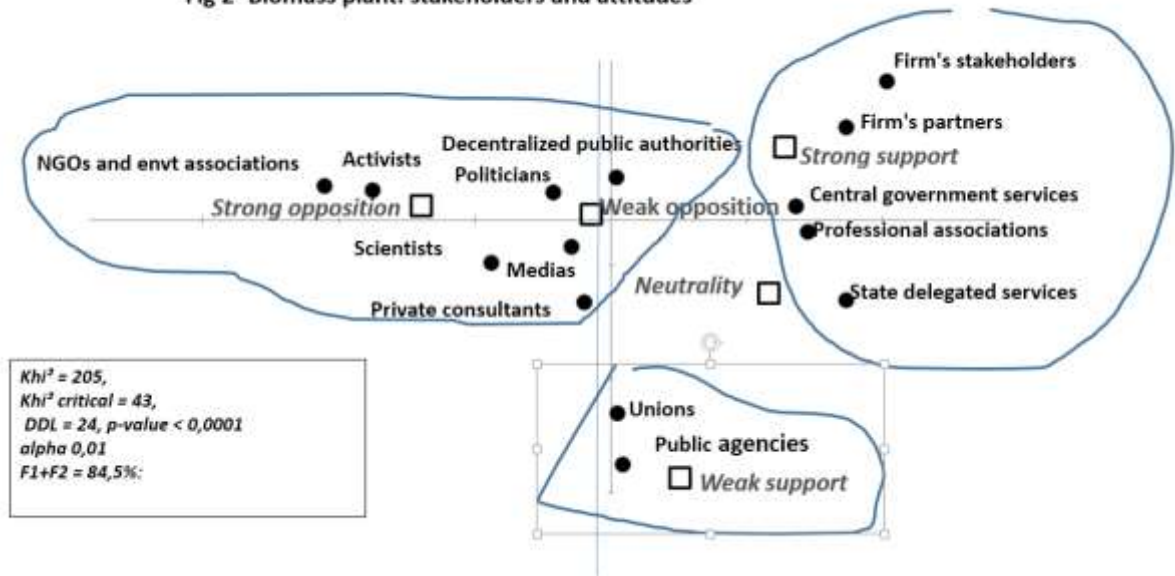
In both cases the public decision makers stand in the middle though with a difference: in the alumina case the central government services are on the "opposing" side behind a minister showing a strong pro-environment priority, while local public authorities and to a lesser extend politicians stay more neutral because they act as mediator. In the biomass case, the central government supports this low-carbon energy project whereas the local authorities and the local Government services and administrations remained neutral or weakly opposed. The decentralized public services (e.g. municipalities) and the politicians include also extreme positions, suggesting the interaction of local interests. For instance mayors of nearby towns using biomass burners for heating, fear the plant pushes wood price up.

A comprehensive analysis of the pieces of verbatim and the materials of the case shows the deep mismatch of the geography of biodiversity with the established territorial administrative and political divisions, siege public decisions. This causes a permanent demand for arbitration, which tends systematically to reach the highest levels of the public decision, dispossessing the territorial public managers of their power to decide and design. Then the latent claim for grassroots democracy and bottom-up formulation urging for more citizen participation in decisions affecting their close environment, is constantly at odds with the demand for arbitration by the top when biodiversity is at stake. This is because the self-declared stakeholders in those conflicts are driven not only by their territorial belonging but also by values relating to human-Nature

relationships that transcend territory. This also underlies the three clusters of **fig. 1 and fig. 2** when one examines the verbatim of each type of stakeholders.

The attitudes of several stakeholders express more their "moral values" than their vested interests threatened by the project (NIMBY effect for instance) and which could be settled by economic compensations. This prevalence or "moral" attitudes is also supported by the positioning of stakeholders according to their distance to the site (not presented here): in the Alumina case, the strongest opposition often emanates from stakeholders that are distant and therefore express attitudes independent of their feeling material welfare harm. This observation has motivated a deeper analysis of implicit values underlying the stakeholders' declarations and to propose a model of attitudes in such conflicts presented next.

A trilogic model of attitudes production in man-nature environment

To account for thinking in man-nature relationships, we define three basic reference value systems, that we term them respectively "Anthropocene", "Eco-pragmatic" and "Promethean". We have chosen those names after an extensive literature review about man-nature relationships.

- The "anthropocene" refers to certain contributions of the proponents of the "theories of the Anthropocene" according to which Man has become the major agent of contemporary change affecting all natural elements. In this value system, relations between humans and the natural environment are viewed as a permanent conflict in which Nature is too weak and Man is too strong. This leads to a generally pessimistic vision of the future, for Nature by itself is assumed to be able to find its way towards virtuous equilibria while Man's activity threatens it out of proportion. By a boomerang effect, Man threatens his own survival. According to this perspective, by nature global, radical measures often top-down decided and at the scale of the planet must be imposed to escape disasters caused by human greed and to preserve the legacy for future generations. A radical change of the global human organization is also advocated.

- By contrast, the "Promethean" value system envisages Nature as originally hostile, threatening, dangerous, and imperfect. Man's action is compelling for preserving and

improving human welfare. Nature is strong and Man is weak though smart. So, if damages to mature threatens Man's future, technology will be able sooner or later to fix it. Observing that the living conditions of the past generations have constantly been improved over time the future is not dreaded. According to this somewhat consumerist appreciation, Nature should and could adapt to human activity through a sort of "natural" selection process. It is thus advisable to leave room for experimenting rather than regulating: stimulate risk taking, lessen the constraints on enterprise activity and correcting the nuisances, if any, by technical and scientific achievements. In this view, a too strict regulation of activities (industrial in particular) is seen eventually as an obstacle to human welfare.

Between these two visions, the "eco-pragmatic" or "eco-systemic" value system recognizes like the Anthropocene the possibility of the apocalypse but insist on the intimate fate of Man and Nature, requiring close cooperation and respect. For this, it insists on knowledge creation and its dissemination through education. Relations between Man and his environment (past and present) are perceived in a more circumspect manner, and if it are negative, nonetheless possible positive interactions can be engaged to preserve good living conditions of all species Man included. From this perspective, human-nature relationships can certainly be corrected by measures that are adapted and discussed locally and collectively (a mix of bottom-up and top-down decision-making) to preserve many goods and services that Nature and its ecosystems do provide. However, regulation is still necessary (lucidity), in particular to raise awareness among stakeholders (). Education is then strongly advised, together with dialogue between scientific and vernacular expertise. Adapted of rules to local contexts, especially economic ones is recommended. So if central government regulation appears to be a "necessary evil", at the local level the use of coercion and sanctions is an exception, with adjustments being preferred (timetables, exemptions, etc.).

We summarize **(Table 2)** some major characteristics of each of these extreme attitudes in relationship to four standard decision-making drivers.

Table 2 – Modeling of attitudes

Trilogic modelling of attitudes			
Themes	Anthropocene	Ecoprogmatic Ecosystemic Ecomodernist	Promethean
Man-nature interaction	*Man affects nature at a scale which is a danger for its future. Nature is "good"*	*Man and Nature can cooperate for mankind welfare*	*Nature is imperfect, often threatening and must be tamed, correctet and sometimes fought. Its resources have to be processed*
Religion, Myths Metaphors	*Guiltiness Puishment Apocalypse*	*Reconciliation Redemption forgiveness*	*Prometheus Cornucopia*
Attitude toward future	*Pessimism*	*Circonspection and Parsimonia*	*Optimism*
Principles for action	*Precaution principle (inscribed in the French constitution)*	*Prudence (management by reason) (Aristotle)*	*Risk taking, adventure, sacrifice (trail and error),*

These extreme attitudes act as "knowledge filters" in each conflict. However, depending on the conflict, the positioning of each stakeholder can be more or less distant from the three nodes. When environmental and especially biodiversity issues are at stakes, the imprecise and unstable status of the concept, previously exposed, leads the stakeholders to retreat behind one of those reference to express their attitudes. Confronted with a huge mass of relevant pieces of information to sort out, each stakeholder selectively collects and mobilizes pieces of knowledge according to which extreme he or she feels closer (**see fig.3**).

We contend that the exacerbation of conflicts is to situate in the dynamics of such filters and the relative positioning of the stakeholders in this triangle. One may thus explain why such conflicts last and are not easily settled by usual conflict resolution procedures such as court decision, mediation, or economic compensations. Behind the vested interests there are big gaps among the values of the stakeholders.

To our knowledge, this is the only model that encompasses the three temporal dimensions of interactions (past, present, future) from which management implications emerge.

Fig 3 - Two illustrative configuration of positioning stakeholders
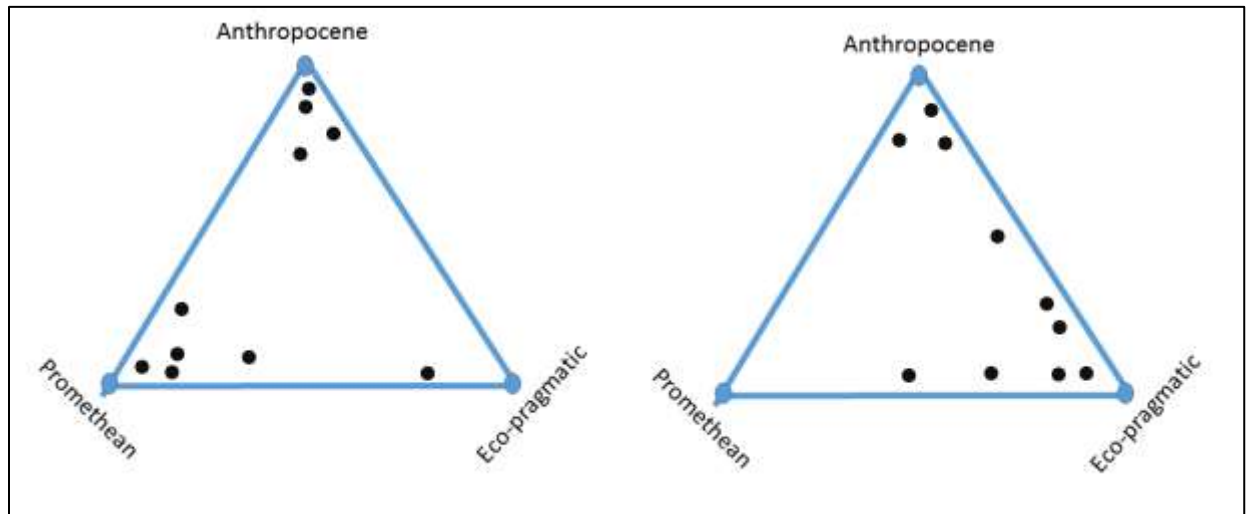
To test and feed this model, we have conduct 33 in-depth interviews (lasting from one to two hours) (Glaser & Strauss, 1967) with decision-makers involved in the studied cases. They came from 27 organizations (public and private). Five had a good scientific background in natural sciences, but most were not very familiar with some key aspect of the issue. We have analyzed these discourses in detail (Miles & Huberman, 1994) (software: N-Vivo) to highlight the influence of each filter.

5 - Main results from interviews of decision makers

Through the 33 interviews, we assess first the "awareness" of biodiversity, highlighting the "vagueness" of the object, its territorial translation, its multiple facets, notably in the appreciation of human-nature relationships, such as they are perceived over time. For instance private decision-makers were not or little aware of their Mediterranean environment being richer than elsewhere (Cuttelod *et al.,* 2009; Coll *et al.,* 2010,). They also tend to see nature as very "resilient" to human activities, even the most destructive to the eyes of scientific.

When asked about the various players, including scientists and defenders of biodiversity, they tend to focus on those they classify in the "militant" sphere. So, this highlights the low consideration of biodiversity among the multiple interests of stakeholders. According to the interviewed decision-makers biodiversity seems to be

mobilized as legal arguments for opposing public and private large projects, especially industrial ones. So biodiversity and its challenges appear as repellents brandished by a category of the population that can be grouped under the generic term of "ecologists – militant-scientists". They are perceived as opponents of progress and deployment of human activity. The "pique-prune" story (a small beetle whose preservation rules have crippled for several decades a modern high-way project between two large cities) is often mentioned by public and private managers as a case of what they dread when launching a new project (Blandin, 2010).

Surprisingly, among the unexpected results, we find a recurrent idea that certain ecological disasters of anthropic origin are playing in favor and not against biodiversity because they have heard of report that species in violent shocks estimated as irreversible by biological scientists, in fact stand better than expected. Emblematic examples of Chernobyl, oil spills, and animal extermination in road traffic are then cited.

We confront those beliefs develop with the most up-to-date scientific knowledge on these questions In other words, the threat to Mediterranean biodiversity seems to be systematically minimized when it is not ignored, in contrast with scientists' assertions that it is more than elsewhere threatened by fragmentation, urbanization, spatial disorganization. The public and private decision-makers envision the territory in terms of the value accruing to their specific activity by its attractiveness. They do not link their own activity to the durability of the natural environment in which those activities take place. So they filter information with a quasi-systematic view that the threats are overstated and/or than the problems can be overcome by human action and sometimes technology. Of course the cause of down-playing the issue is complexity of the object itself as exposed previously, "at the frontiers of sciences". The attitude seems to be "since this is beyond our understanding and widely controversial, let us ignore it". But this deliberate dropping of the issue can be viewed as a Promethean filter at work: nature is smart enough to repair the damages and when needed, Man's action and sometimes technology will assist it for resilience.

This filter produces an apparently paradoxical attitude: some disdain of decision-makers for the scientists' assertions but much confidence in technology as a way to solve problems identified by scientists. In fact, to the Promethean eye, it seems

preferable to dispense with scientific knowledge because of the inability of scientists to answer clearly the questions facing the decision-makers, on which those expect clear solutions based on stabilized knowledge and out of any militant position. The weakness of the links between scientists and the Government services emerges from our interviews: big production of academic literature, though too specialized to be implemented as policy instruments, contrasting with a crucial need of expert solutions, especially for the continental territories.

However, the absence of a globally and locally frame of reference for biodiversity can also result in a certain organizational slack or laxness to implement public policies because top-down public management systems designed dealing with objectives expressed in "numbers" or volumes meet resistance from the decision-makers. To follow a well-known Hayekian criticism, such policies often fail to deliver their promises because they downplay the complexity of the society which they address to. So, we found paradoxically some reasons to praise the virtues of slackness when it results in more preservation of biodiversity. The reason is that the absence of an institutional frame of reference for biodiversity with a defined management system, leaves the way open to more personal interpretation by the public decision-makers who then rely more on their personal values as guidelines to perform their tasks. The interviews show the public managers as are more "anthropocene-oriented", often expressing some personal pessimism on environmental issues. So, having to serve all categories of stakeholders, they are inclined to design intermediate solutions, guided by an eco-pragmatic approach of the situation. The creation by the Prefect to two committees to soothe the Alumina plant conflict is a typical output of this desire to find a synthesis between extremes anthropocene and promethean expectations.

It turns out also that the defense of continental biodiversity is, at least partially, ensured by the great dispersion of property rights among individuals with multiple values, (about ¾ of the forest in small private owners' hands. This decentralized system of decision helps keeping at bay more intensive industrial exploitation of natural spaces uniquely based on the balance sheet bottom line. The permanency of "myths" relating to Nature and Man, instilled in a subtle way in the meanders of the society, can give rise among the many stakeholders to individual or collective genuine commitments to defend the living world in a wiser approach than through large abstract public projects

towards whom the citizens generally feel little concern, So, on the continental side where public decisions tend to be approached under a Promethean angle, the decision-makers tend to think that property and laissez-faire appear as good guarantors of the preservation of natural environments, although pressures from private interests and weak local governance can be obstacles to upgrading environmental treatments. On the marine side by contrast property rights are the exception in the vast "commons" of the sea and therefore the "tragedy" is looming around (Hardin, 1968). Aware of the threats, many stakeholders (fishers, sailors, tourists etc.) exhibit "anthropocene values" and doomsday thinking. They press the central power, through regulation, to take care of the fate of biodiversity, but they are also eager to be participants in the decisions. So, as shown by Ostrom (1990), more decentralized cooperative non-market solutions may develop.

6 - Recommendations and conclusion

We have explored and shown the relevance of the exposed tri-logic model of Man-Nature relationships. We have shown how the multiple dimensions of biodiversity lead to some confusion in the understanding of this object by different decision-makers or stakeholders. This account for its lack of institutionalization, so far, and the willy-nilly attempts of public decision-makers to regulate it, to provide legislation, with some hesitation to sanction disputable behavior. Its treatment as an environmental issue aside others in a national Government agenda that also includes climate change, pollution, territory occupation, mobility, agriculture change, and health does hardly give it any priority. The pressure of activist groups is often stronger on these other issues than on biodiversity. The French minister of "Ecological transition", a widely popular producer of nature TV documentaries in France, appointed in 2017 as number 2 of the Cabinet after the prime minister, has spectacularly announced his resignation in a primetime TV broadcast in 2018, with the words "Biodiversity? Nobody gives a damn!)

Or work leads to provide recommendations in managerial practices at all levels of management and in particular locally. These recommendations emphasize the need to create structures for the inventory of knowledge and experts, whose lack or

shortcomings have been highlighted through interviews with decentralized public managers, and more at the continental than the marine sides.

This integration calls at the same time for institutional innovations provoking a direct and face-to-face confrontation of values and attitudes to establish face-to-face negotiated compromises approaching the ideal of public value, while on the contrary the multiplication of sources of information and knowledge, accessible via networks, causes divergence by accentuating individual retreating towards the preferred model, and thus amplifies the dispute.

In summary, it involves integrating more participative and transparent operating modes and innovating with tailor-made "tools" tailored to the scale of the projects and their impacts.

Paradoxically, we also observe that the invocation of certain "myths" of "idealized Nature" (Thoreau, 1854; Leopold, 1949; Wohlleben, 2015) play a key role in these rapprochements and in the commitments in favor of the defense of biodiversity. This is in line with Weick's work (1993) and may also explain the deep and persistent unrest in public institutions where the stakes of preservation clash with those of economic efficiency, fuelling never-ending conflicts (Gritten *et al,*. 2011 ; Gritten *et al,*. 2013).

We thus show the importance of integrating the various stakeholders, bearers of these "myths" and these different visions (filters), for a better consideration of the various challenges of biodiversity and the co-construction of a global benchmark going in the direction of more contemporary governance.

We therefore advocate the idea of national "forums" on the example of the French meeting "*Grenelle de l'Environnement",* to raise biodiversity to the same rank as climate change and not as subsidiary chapter of it.

Through this work, we hope to have promoted a greater integration of biodiversity issues in management practices and research because they are full-fledged topics in management science. This is compelling when anticipating the many such conflicts to come in the next decades. Public management will play a key role in the treatment of these "externalities" pertaining to life in all of its dimensions. To elaborate the often inextricable regulations to cope with them mentioned in this thesis, the politicians and

civil servants have undoubtedly practiced the three basic cardinal virtues of temperance, justice, and prudence that are expected from policy-makers. However, we infer from our work that they will need also the fourth one added by Plato (Khaled & Jemaa, 2015), courage and fortitude (McCloskey, 2010).

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Emerging Perspectives on Behavioral Competencies:
An innovative measurement model, learning antecedents, and employability outcomes

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Abstract

In recent decades, systematic comparisons between best and average performers have shown that the people who perform best in their job are those who manifest behavioral competencies, which are the ones related to emotional and social behaviors. Literature on behavioral competencies, as a stream of Emotional Intelligence, is highly fragmented and mainly focused on leaders and adult workers in organizations. This thesis shifts the focus on young individuals exploring the processes that allow them to better develop, measure, and exploit behavioral competencies. Through the integration of educational, psychological and managerial theories, this thesis contributes to the current debate on behavioral competencies by providing a better understanding of their antecedents, outcomes, and measurement.

INTRODUCTION

Behavioral competencies are defined as "related but different sets of behavior organized around an underlying construct, which we call the 'intent" (Boyatzis, 2009: 750). They comprise emotional, social and cognitive abilities that have been associated with effectiveness, particularly when manifested by people in leadership positions (Emmerling and Goleman 2005; Rosete and Ciarrochi 2005). They showed to be accurate predictors of personal and professional success (Boyatzis, Rochford, and Cavanaugh, 2017; Sigmar, Hynes, and Hill, 2012) and nowadays they are considered one of the most valuable characteristics in the workplace (Azevedo, Apfelthaler, and

Hurst, 2012; LinkedIn, 2019). However, despite the recognized relevance of behavioral competencies in the organizational context, the labor market has frequently emphasized the existence of a behavioral skills gap (Azevedo et al., 2012; Gault et al., 2010; McKinsey and Company, 2012), which reveals that individuals do not display the behavioral competencies desired by organizations and needed to be effective. The aforementioned behavioral skills gap calls for the need to focus the attention on young generations entering the labor market. This thesis aims at deconstruct the processes through which the behavioral skills gap could be reduced by providing a better understanding of behavioral competencies antecedents, outcomes, and measurement. Through the integration of theories from different fields (experiential learning theory, emotional intelligence, career orientation), this thesis contributes to the current debate on behavioral competencies i) by considering complementary ways – specifically extracurricular activities – in which young individuals can develop behavioral competencies, so as to be equipped with the competencies they need; ii) by assessing whether behavioral competencies affect the way young individuals approach their career decisions and ultimately their employability; iii) by examining and proposing a way to effectively assess behavioral competencies.

THEORETICAL FRAME

Behavioral competencies

The study of behavioral competencies represents one of the streams of Emotional Intelligence (EI) research. Three main models dominate the field and are associated with different measurement strategies (for a more extensive review see Cherniss, 2010). The behavioral approach, which is based on the work of Boyatzis and Goleman (Boyatzis and Sala, 2004) and the influence of McClelland (1973), "refers to those competencies that are clearly linked to EI" (Cherniss, 2010: 115). The concept of competency encompasses both actions and the intent that moves individuals to manifest the behaviors. Differently from other approaches, the behavioral one "offers a theoretical structure for the organization of personality and linking it to a theory of

action and job performance" (Boyatzis, 2009: 757). Indeed, behavioral competencies have been shown to enable people pursue effectiveness in the organizational context (Beigi and Shirmohammadi, 2011; Brown, George-Curran, and Smith, 2003; Emmerling and Cherniss, 2003; Emmerling and Boyatzis, 2012; Williams, 2008; Zhang and Fan, 2013), as well as to contribute to higher levels of psychological and physical well-being and more satisfying interpersonal relationships (Bisquerra Alzina and Pérez Escoda, 2007; Pérez Escoda, Bisquerra, Filella, and Soldevila, 2010).

Experience as enabler of behavioral competency development

Scholars claim that behavioral skills need to be taught, adopting non-traditional methods in which the person is involved in an emotional and experiential context (Dwyer, 2001; Kremer and McGuiness, 1998). By involving participants in a process of reflection, interactive engagement, and practice, experiential learning techniques stimulate the cognitive, behavioral, and emotional dimensions of learning that are necessary to acquire emotional and social competencies (Hoover et al., 2010). Experiential learning theory's key pillars challenge the traditional idea that learning is achieved through transmission of knowledge, and claim that learning is a process of creating knowledge through the synergetic transactions between the person and the environment. In this transaction, one is called upon to think, feel, perceive and behave shifting between the four modes (Kolb and Kolb, 2005).

In contrast with traditional educational activities mainly focused on transmission and on the "thinking" mode, extracurricular experiences provide students the opportunity to be engaged in concrete experiences that allow individuals potentially adopt all four modes. Extracurricular activities expose students to different environments that challenge their perceptions and behaviors. Through active involvement in extracurricular activities, students have the opportunity to identify, model and mirror appropriate behaviors to promote higher levels of critical thinking and reflection, which are essential to the development of behavioral competencies. Compared with forced or simulated experiences, natural experiences induce more reflective and revelatory ambience (Nair, 2011).

Previous research supports a positive effect of participating in extracurricular activities on people development, especially in young age (Fredricks and Eccles, 2006). Participating in extracurricular activities should provide students the opportunity "to acquire and practice specific social, physical, and intellectual skills that may be useful in a wide variety of settings" (Eccles et al., 2003, p. 866).

Exploit behavioral competencies to deal with the current job market

The uncertainty that characterizes nowadays labor market asks individuals to be more proactive in managing their career in order to adequately prepare for the school to work transition and increase chances for employability. In this regard, studies on protean career (Hall, 2004) claim the role of self-directedness in one's career orientation and path, which means that individuals assume responsibility and personal agency for their career decisions (Briscoe et al., 2006; Hall et al., 2018).

Seminal contributions on protean career orientation have proposed that two competencies, namely self-awareness and adaptability, have a primary role in nurturing an individual's protean career orientation (Gubler et al., 2014; Hall, 2004). Nevertheless, recent studies (Gubler et al., 2014) have pointed out that this relationship has hardly been empirically tested.

Exploring the role of behavioral competencies as predictors of protean career orientation is particularly salient since, as demonstrated by prior studies, competencies can be developed by educational institutions (Boyatzis, Stubbs, & Taylor, 2002; Hoover, Giambatista, Sorenson, & Bommer, 2010), with relevant implications for preparing individuals for contemporary careers.

I built on motivation orientation theory (Martin, 2001, 2002), and on the latest developments of person-organization fit theory (Wille, Beyers, & De Fruyt, 2012), to identify the behavioral competencies that may influence the person's protean career orientation. I argue that competencies related to setting learning goals and maintaining optimism in pursuing those goals, and competencies related to understanding and influencing the environment are positively associated to protean career orientation.

According to motivation orientation theory, individuals who attain their self-defined learning goals view tasks in terms of effort rather than ability (Wiegand & Geller, 2005).The focus on effort reflects an orientation towards achievement. Motivation orientation theory also asserts that individuals with a learning focus are less threatened by failure in pursuing their goals. A positive outlook help individuals perceive problems as challenges to overcome rather than as obstacles. Individuals with positive expectations about future events are more likely to assume a proactive career orientation, since they perceive career changes not as threats but as opportunities for learning and professional advancement (Fugate et al., 2004).

An updated perspective on person–environment fit has proposed that the adjustment between individuals and their environment is dynamic and reciprocal (Wille, Beyers, & De Fruyt, 2012), thus implying that individuals are assumed to be able to influence their environment. Hall et al. (2018) argue that protean career oriented individuals are unlikely to be affected by external controls or influences. Rather, they may be active agents in identifying and shaping their environment so that it allows their personal needs to be met and their main values to be pursued.

Enlarge and enrich competency models to better identify drivers of effectiveness in different contexts

Based on the behavioral approach on Emotional Intelligence, several assessment instruments that measure the adoption of behavioral items have been developed (Boyatzis, 2009; Mikulic, et al., 2015; Palmer et al., 2009). Although all these instruments are useful to evaluate behavioral competencies, and showed different validity and reliability attributes (see Cherniss, 2010; Ackley, 2016, Boyatzis, 2016), they seem limited in the range of competencies that they can assess. According to Cherniss (2010:114), the "virtue of the broader models is that they bring together many of the emotional and social abilities that are important for success in school, work, and life into one framework". Indeed, in recent years, economic, social, and cultural factors have shaped organizational activities, requiring a reconsideration of the skills necessary to be effective in this new scenario. These behaviors concern for example entrepreneurial behavior, innovation abilities, engagement in the group/organization,

the ability to think outside the box or to think in a visionary fashion. I thus adopted both deductive and inductive approaches for the initial scale item generation (Hinkin, 1995). An in-depth literature review was undertaken considering existing competency dictionaries/codebooks (e.g. Boyatzis, 1982; Boyatzis, 2009; Spencer and Spencer, 1993), integrating it with the search for individual characteristics that drive effectiveness in emerging literature fields that analyze the behavioral aspects of innovation processes and entrepreneurship (e.g. Dyer, Gregersen, and Christensen, 2008; Puccio, Mance, and Murdock, 2011). As far as the inductive approach is concerned, I carried out 148 interviews of high performance entrepreneurs, new product development team members, and project managers adopting the Behavioral Events Interview technique (McClelland, 1998) and deriving inductively through coding the behavioural patterns adopted in episodes of effectiveness. Integrating existing competency models with emerging competencies from the literature and from the empirical analysis, I defined a framework of 31 behavioral competencies.

METHOD

This thesis adopts a quantitative empirical approach. Epistemologically, the investigator and investigated are considered independent entities. The three studies look for relationships between existing constructs, derive hypothesis from theory or logical arguments, and tests for confirmation or disconfirmation of those hypothesis.

Survey tools were used to collect self-report measures and peer-reviewed measures. In the first two studies data on behavioral competencies were collected through a 360-degree assessment. This evaluation system has been recognized as "one of the most remarkable innovations in leadership development over the past 20 years" (Hezlett, 2008, p.703). In order to address the issue of rater accountability and prevent biased ratings, many strategies have been adopted according to the literature that investigates 360 degree assessments (Bracken, Rose, and Church, 2016; Helzett, 2008; Hensel et al., 2010; Scullen et al., 2003).

Data were explored and analyzed to verify model assumptions. The methods used to tackle the thesis research questions included different types of analysis (Partial Least Square – Path Modeling, Structural Equation Modeling, Exploratory Factor Analysis, Confirmatory Factor Analysis, Correlations).

Table 1: Methodological choices

	Study 1	Study 2	Study 3
Type of study	Empirical	Empirical	Scale development
Empirical approach	Quantitative	Quantitative	Quantitative
Sample size	n = 324	n = 120	n=1346 (six studies)
Analysis/ technique	Partial Least Square – Path Modeling	Structural Equation Modeling	Exploratory Factor Analysis, Confirmatory Factor Analysis, Correlation
Measures	Self-report Peer-reviewed	Self-report Peer-reviewed	Self-report

EMPIRICAL CASES

A 360 degree perspective on behavioral competencies: three studies

The persistent demand in the job market for professionals with higher behavioral competencies underlines the need for further research to understand, besides formal training, what else may enhance behavioral competencies. The first article looks at the determinants of behavioral competencies. The literature has highlighted that the development of behavioral competencies is a complex phenomenon and requires a change in people's habitual behavior (Boyatzis, 2008; Cherniss and Goleman, 2001).

Researchers started to develop, implement and test the effectiveness of formal training activities based on Experiential Learning Theory in higher and executive education settings (Boyatzis et al., 2002; Hoover et al., 2010). However, the number of people that can access this type of training is still limited. This entails that in order to develop behavioral competencies most people still rely on their personal experiences. Previous studies suggested that a way in which young individuals can practice and develop behavioral competencies is by actively participating in extracurricular activities (Rubin, Bommer, and Baldwin, 2002). Intuitively, this notion has been widely used in HR hiring practices assuming higher behavioral competencies for those individuals that participated in extracurricular activities. However, no study has comprehensively and empirically investigated the effect of extracurricular activities on different types of behavioral competencies. Hence, this study asks whether the participation to different types of extracurricular activities influences young individuals' behavioral competency portfolios. Findings reveal that participating in extracurricular activities is associated with higher levels of behavioral competencies; however, not all extracurricular experiences affect all types of competencies. This study helps disentangle this relationship showing that cultural activities influence interpersonal and cognitive skills, sport activities help enhance self-management competencies, while experiences abroad relate to higher social awareness, social management skills and cognitive competencies. In so doing, this thesis advances the understanding of which activities that are not part of academic curricula influence students' behavioral competencies, and which kinds of activity are associated with specific clusters of competencies.

As one of the biggest challenges in developing behavioral competencies is the involvement in contexts in which the person can practice new behavioral repertoires (Boyatzis, 2009; Hoover et al., 2010), I argue that extracurricular activities may represent a relevant setting in which individuals can apply experiential learning for behavioral competency development. However, each type of activity is characterized by specificities that allow the individual to experiment and prove some behaviors more than others. Thus, I challenge the accepted wisdom that infer the possession of behavioral competencies from the presence of any type of extracurricular activities in a student's curriculum vitae, proposing that specific types of extracurricular activities may enhance different types of competencies and that the behaviors that were actually experimented should be scrutinized.

The second study concerns the outcomes of behavioral competencies. It assesses the impact of behavioral competencies on the way graduates approach their career and the effect that this approach has on employability. I focused on the emerging body of research on protean career orientation that defines a non-traditional way of approaching one's career path, which is consistent with the current turbulent job market context (Briscoe and Hall, 2006). Indeed the current employment conditions for young individuals are characterized by a high level of ambiguity regarding one's career path and expectations. In order to deal with this ambiguity, careers have become increasingly directed by the individual rather than by the organization and affected by the person's intrinsic values. Scholars defined this approach as "protean" (Hall, 1976). Literature on protean career orientation relates the construct to two behavioral competencies (self-awareness and adaptability) (Hall, 2004). However, the role of these competencies is still under debate, very few empirical studies have been undertaken to test their impact (Gubler et al., 2014), and no studies have questioned if other behavioral competencies contribute to the adoption of a protean career orientation. Moreover, I investigated if having a protean career orientation supports young individuals on entering the labor market, considering its effect on employability according to both its subjective and objective domain.

Based on data on newly graduated students, findings not only provided support for the positive effect of adaptability and self-awareness, but also introduced that a broader set of behavioral competencies enables young individuals to approach their career in a self-managed and value-driven way. Specifically, the results suggest that being able to manage oneself to pursue learning goals, and to understand and influence the environment, leads individuals to be more inclined to adopt a protean career orientation. Moreover, results showed that people who conceive career in a protean way feel they are more employable and receive a higher number of job offers. Thus, I claim that for young individuals behavioral competencies represent an asset to enter the job market, as they enhance graduates' subjective and objective employability, and this relationship is mediated by a protean approach to their career path individuals develop.

The third study aims at effectively measure behavioral competencies for both developmental and evaluation purposes. A number of survey-based assessment tools

are already present in the literature. However, the current instruments present some limitations: a) they assess one specific competency or a relatively restricted set of competencies, which limits the possibility to assess a wide variety of behaviors that can influence effectiveness in different settings, and may lead to the assessment of competencies with not-compatible instruments; b) some models were developed in the 80s and 90s, which calls for a reconsideration of the skills needed to be effective in the current organizational environment; c) some scales refer exclusively to working/company settings, which make them not applicable to different target people; d) most scales privilege internal consistency rather than complexity of the constructs, underestimating their possible sub-dimensions. In order to overcome these limitations, this paper develops and validates a new competency framework and scale to assess a comprehensive set of thirty-one behavioral competencies. This was achieved by performing six studies (summarized in Figure 1) assessing content and face validity, reactivity, discriminant validity, concurrent validity, psychometric properties, and by grouping the thirty-one categories into six second-order factors.

Figure 1: six stages of competency framework development and scale validation

	Item generation	Inductive and deductive approach
	Content and Face Validity	Expert judgement Focus groups
Study1	Item reduction	Statistical and substative criteria
Study2	Reactivity Discriminant validity	Control for social desirability Relationship with demographic variables and personality traits
Study3	Psychometric properties	Factor structure, Average Variance Extracted and reliability measure
Study4	Second order factors	Confirmatory Factor Analysis and factor invariance
Study5	Concurrent validity	Relationship with Life satisfaction and Perceived employability
Study6	Concurrent validity	Relationship with Career satisfaction and Performance

Results provide an updated, validated, comprehensive instrument to assess behavioral competencies.

Differently from existing scales, which privileged internal consistency rather than variety of dimensions, the item generation phase and subsequent stages of the validity assessment embraced the complexity of each included construct. As behavioral competencies may be defined by not only one but a set of behaviors which, although following the same intent, may differ, methodologically the study shows the need to differentiate between formative and reflective constructs (Bisbe et al., 2007). Scales that privilege internal consistency demonstrate a limited and biased ability to measure a complex multifaceted construct. In the item generation phase I decided to include a comprehensive set of items per each competency able to depict the variety of behaviors with which the competency is demonstrated. In the subsequent stages of the validity and reliability assessment, in order to assess the underlying factor structure of each

scale, I first studied the nature of the items, whether they are formative or reflective (Bisbe, et al., 2007; Jarvis, Mackenzie, and Podsakoff, 2003; Law, Wong, and Mobley, 1998). This allows creating an assessment tool that is not biased towards one specific facet of the construct, but rather includes all the major facets that constitute the construct.

PRACTICAL IMPLICATIONS

Educational implications

There is a general agreement on the fact that higher educational institutions should better prepare students for their future and this includes improving their behavioral competencies (Andrews and Higson 2008). Both the introduction of *ad hoc* development programs (e.g. Chen et al., 2004; Waddock and Lozano, 2013) and the exploitation of out of the class experiences can help students foster their behavioral abilities. The findings of this thesis show that extracurricular activities are significantly associated with higher levels of specific clusters of emotional, social, and cognitive competencies. As these experiences are extracurricular by definition, one could think they pertain exclusively to the individual remit. However, we assert that educational institutions can benefit from these findings and act consistently in order to help students acquire the competencies they need in three ways: i) by promoting awareness of the role of extracurricular activities in enhancing behavioral competencies; ii) by promoting participation inside and outside the university campus, and training instructors accordingly; iii) by adopting extracurricular activities as real life learning laboratories in competency development programs.

This thesis also suggests that behavioral competencies can enhance graduates' protean career orientation, highlighting the fact that developing behavioral competencies in students helps them to assume control over their career and orient their career decisions according to their needs and values. Educational institutions should create dedicated programs to improving students' behavioral abilities and assist them in reflecting on how to approach their future career, how to take charge of their career in a flexible and value-driven way that will have a positive effect on employability.

Behavioral competencies become crucial elements that need to be developed across the education path of the individual. This can be achieved first by raising awareness on the

importance of these competencies, second by creating motivation to the development of these competencies. Third, there is need to develop awareness on one's current behaviors, adopting behavioral competency assessment models, like the one proposed in this thesis. This helps students reflect on their habitual behavior, on the effects it could have in the organizational environment, and evaluate what are their strengths and what are the competencies they need to develop in order pursue their professional desires.

Managerial implications

This thesis also highlights also some managerial contributions. First, it scientifically supports the relationship between behavioral competencies and extracurricular activities that has been frequently taken for granted in recruitment and selection processes. Moreover, it helps to better understand this relationship by disentangling the effect of different extracurricular activities on different clusters of behavioral competencies. This draws attention to how research can offer a clearer and scientific-based base to build processes previously driven by intuition. Second, it advises employers to take into account the career orientation of candidates, which may be driven by certain behavioral competencies and tend to affect the individual's employability perception. Third, it provides a measurement model that can be used in various human resource management practices to evaluate people's behavioral competency in great detail and with great flexibility thanks to the large repertoire of competencies included.

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Modelling The Household Aggregate Food Demand System - Croatian Example

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Abstract

This thesis is conducted of a detailed analysis of food expenditures, considering they are the largest household expenditure with a significant impact on welfare. The primary motivation for this doctoral dissertation is to provide the in-depth research of Croatian aggregate demand using a methodology that process household-level consumption data. Consequently, we estimate economic and socio-demographic parameters affecting aggregate demand for food, determine the efficiency of the estimated demand model, and empirically derive different food demand elasticities. The main findings do not deviate in large scale when compared with other (post)transition countries of a similar geo-political profile. Contemporary research of aggregate demands is firmly grounded in microeconomic modelling, resulting in more powerful tools for simulating the effects of public policy changes on a wide range of indicators.

Introduction

The issue of personal consumption research has come to the attention of scientists after Keynes's findings on the causes of the Great Crisis. A vast body of present literature argues that Keynes' insights are current when pursuing anti-crisis policies. The study of the original correlation between disposable income and consumption has progressed significantly, thus theoretical knowledge is today supplemented by various dynamic macroeconomic models that track consumption trends over time. However, given that personal consumption as the most important component of aggregate demand can essentially be viewed as a set of all individual household consumption decisions, it becomes clear that the approach to personal consumption research at the aggregate level can be reduced to microeconomic models. Contemporary

research of aggregate consumption and demand are firmly grounded in microeconomic modelling, resulting in a deeper knowledge of interest categories and more powerful tools for simulating the effects of public policy changes on a range of indicators, from the well-being of an economy to the effects on budget revenues. Analyzing the approaches to modelling personal consumption in Croatia so far, we have established that they are mostly based on a predominantly macroeconomic view of the consumption problem, hence one of the goals of this doctoral dissertation is to incorporate the microeconomic approach in modelling aggregate consumption, more precisely, the demand for food products.

In most developed countries, household consumption is the largest macroeconomic aggregate with a share in GDP of about 60%. Croatia is no exception and therefore, even in times of deep recession, the share of personal consumption is relatively stable at about 60% of GDP. Personal consumption as a component of aggregate demand has a multiplicative effect on overall macroeconomic trends, emphasizing the significance of monitoring and analyzing the dynamics and characteristics of personal consumption in developed and less developed countries, for the creation and implementation of economic and social policy (Denona Bogović, 2002; Jurčić and Čeh Časni, 2016). Moreover, the food industry in general is of great importance for the Croatian economy, since, together with the beverage industry, it accounts for about 24% of the total manufacturing processing industry and employs about 20% of employees. In accordance, the reduction in demand for food products would, in addition to direct effects on revenue reduction, have adverse effects on other domestic producers involved in the production chain and on income components - employee compensation, taxes and business surplus (Buturac and Vizek, 2014).

The above considerations address the primary motivation for this doctoral dissertation, which has seek to provide the in-depth research and modelling of Croatian aggregate demand by a methodology that uses household-level consumption data, estimating economic and socio-demographic parameters affecting aggregate demand for food, determining the consistency and efficiency of the estimated demand model, and empirically deriving the expenditure, own-price, and cross-price elasticities of food demand in Croatia. The main contribution of this thesis can be indicated by expanding the theoretical framework on food demand from both macroeconomic and

microeconomic level, pioneering a detailed food demand model for Croatian economy and proposing a practical application of the model in economic policy management.

Literature review

According to the Maslow's hierarchy of needs, food demand is located at the very bottom of the pyramid, placing food among the fundamental human needs. Moreover, food expenditure is the largest household expenditure with a significant impact on well-being, thus implying the importancy of scientific analysis but also interest of the wider community. In the last few decades (especially the post-war era), the spending structure has changed significantly for the Croatian population, disclosing an increase in living standards - much of personal consumption today is focused on the consumption of luxury goods and services, while consumption was previously oriented towards meeting the essential needs such as food, clothing and accommodation. Namely, Croatian consumers are moving closer to the trends already present in most developed countries of the European Union (Obadic and Globan, 2015). However, while trends suggest a certain level of convergence in the structure of the personal consumption, the structure of food consumption is extremely "smooth" – in other words, the share of individual expenditure on food is largely stable. Macroeconomic modelling of the food consumption function based on 2005-2013 population consumption data resulted in a positive impact of GDP and real wages on food consumption, while the CROBEX stock index showed a negative relationship with food consumption (Obadic and Globan, 2015). Interestingly, variables such as consumer confidence index, real estate prices, unemployment rate and household debt did not have a significant impact on consumption trends - the authors of the above conclude that a large share of food consumption is a necessity, therefore not much dependent on macroeconomic trends such as other consumption categories (Obadic and Globan, 2015). These insights might imply that a more appropriate model should be developed to analyze the demand for food products more accurately.

Households' decisions on consumption are particularly important in the short term (given the magnitude of personal consumption in aggregate demand), so better insight regarding the determinants of the demand can be crucial for effective management of fluctuations and the well-being of individuals. Consumers' preferences and purchasing decisions are in most situations a combination of many different determinants, but at the core of the theory is that, given the prices of all goods, the consumer has a limited income that allocates to different goods and services to maximize his utility. The average household income, the price of the observed good and the price of other goods are considered to be the most important factors of demand. In addition to economic factors of consumption, assessing the quantity of demand for food products, can also be subjected to certain non-economic determinants of demand - these determinants will be discussed further in the paper.

Unlike simple estimation models, modelling the demand system grounded in the utility function is a more complex method that involves the simultaneous modelling of multiple demand functions of goods, allowing their interaction. The microeconomic approach to modelling aggregate demand thus becomes a less biased predictor of future demand and takes into account the heterogeneous characteristics of consumers in the system.

Analyzing current approaches to modelling personal consumption in Croatia, we found that they are mostly based on a predominantly macroeconomic view of this issue, while a modern macroeconomic approach starts from a microeconomic basis and by understanding the behavior of a household, relevant conclusions are reached regarding the aggregate level. One of the contributions of this doctoral thesis is precisely the incorporation of a microeconomic approach in modelling aggregate household consumption, more precisely, the demand for food products. The macroeconomic model of aggregate demand, which has been estimated and analyzed using detailed microeconomic data, has wide application. Specifically, the demand model can be used to predict the effects of changes in certain public policy such as the simulation of the change in the value added tax rate (Janský, 2014), the various exogenous shocks affecting the population's income (Blundell and Stoker, 2005) or prices of goods (Dybczak et al., 2014), effects of the income redistribution policies on inequality (Cseres-Gergely et al., 2017) or changes in the population structure such as aging population (Luhrmann, 2005). Obviously, the spectrum of

demand model application is very broad and significant, not only from the scientific, but also from the practical point of view which is reflected in the applicability of the model in economic policy management.

Methodology and data

Modern models define the demand for good as a system of interacting functions, hence the empirical part of the research is developed using the AIDS model (an almost ideal demand system) and its quadratic form QUAIDS. The advantage of modelling the demand system using the AIDS methodology is its flexibility, that is, the ability to test axioms assumed by the microeconomic theory of consumer choice. Practically, the simultaneous modelling of the entire demand system is enabled, and all factors that have been defined as a potential influence on quantity of demand for a given good are taken into account when estimating the model parameters. The obvious advantage of modelling a demand system over single or multiple linear regressions is the rational consumer which behaves independently of other consumers, but his decision on the demanded quantity will be influenced (in addition to the available budget) by the price of the observed good and prices of other products that make up a particular "system". Given that, an more complex model was applied to model the entire food demand system, while meeting the constraints assumed by the theory. The economic determinants of demand were consumer income and product prices, while socio-demographic characteristics of the household were defined according to theoretical settings, and in this model were represented by the following variables: (i) household size, (ii) age of household head, (iii) gender of household head, (iv) level of education of household head, and (v) the presence of children in the household.

The data used in this research is collected by Croatian Bureau of Statistics on a multi-year basis, thus including data on household income, expenditure and various socio-demographic characteristics. The research used data collected in 2014, with survey being carried out on 2029 private households. The consumption expenditures are collected and presented according to the Classification of Individual Consumption by Purpose. After thoroughly analyzing and cleaning the data from outliers that could potentially influence the parameter bias, the data was

aggregated into eight categories of food products acknowledging the specific aggregation requirements (Deaton and Zaidi, 2002), after which such a database was subjected to a statistical analysis. The next step following the data preparation involves the calculation of the price (in this case unit values) using the available data on quantity and expenditures for their purchase. The method of computing and using unit values as prices in the analysis is commonly used when modelling the demand system hence for their ease of use, especially in the particular case where scientists have available data on consumption and expenditures respectively (Deaton, 1986, Deaton and Grosh, 1997 Stavrev and Kambourov, 1999).

Having the data on the expenditures for a particular food category, we can easily calculate their relative shares in total expenditures. According to the COICOP classification, the food aggregation process in this research therefore resulted in eight aggregate groups, taking into account total expenditure on food consumption, along with non-alcoholic beverages - (1) bread and cereals, (2) meat and fish, (3) milk, cheese and eggs, (4) oils and fats, (5) fruits and vegetables, (6) sugars and confectionery products, (7) other food products and (8) non-alcoholic beverages.

Nevertheless, the main difference between single equation models and AIDS can be seen in simultaneity – when consumers decide about allocating their budgets, their decision is performed according to the multi-stage budgeting, thus taking into account information regarding all goods in the system. Another model which can be considered as an extension of the AIDS model is Quadratic Almost Ideal Demand System (QUAIDS) developed by Banks et al. (Banks et al., 1997).

The AIDS model is based on a set of equations estimating w_i

$$w_i = a_i + \sum_{j=1}^{K} \gamma_{ij} ln p_j + \beta_i ln \left\{ \frac{m}{P(p)} \right\}$$

with

$$w_i = \frac{p_i q_i}{m}$$

and

$$ln P(p) = \alpha_0 + \sum_{i=1}^{K} \alpha_i ln p_i + \frac{1}{2} \sum_{i=1}^{K} \sum_{j=1}^{K} \gamma_{ij} ln p_i ln p_k$$

where w_i stand for share of item i in the total expenditures m, p are the prices and $P(p)$ is the price index. Parameters α, β and γ are the coefficients to be estimated by the model, and ought to fulfill the following necessary conditions of additivity, homogeneity and symmetry imposed by consumer behaviour theory:

$$\sum_{i=1}^{K} \alpha_i = 1 \qquad \sum_{i=1}^{K} \gamma_{ij} = 0 \qquad \sum_{i=1}^{K} \beta_i = 0 \qquad \sum_{j=1}^{K} \gamma_{ij} = 0 \qquad \gamma_{ij} = \gamma_{ji}$$

In addition, food demand modelling was also carried out with its extension QUAIDS, which is, as previously stated, an extension of the original AIDS model. Namely, a certain good can be luxurious at lower levels of income, necessarily at medium income levels or inferior at very high levels of income (Benić, 2012). The QUAIDS model is an AIDS model that allows for more flexible Engel curves precisely by allowing the demand for the observed good to be differentiated depending on the level of consumer income (Banks et al., 1997). According to the QUAIDS methodology, the function of the share of good *i* now takes the following form:

$$w_i = a_i + \sum_{i=1}^{K} \gamma_{ij} ln p_j + \beta_i ln \left\{ \frac{m}{P(p)} \right\} + \frac{\lambda_i}{b(p)} \left[\left\{ \frac{m}{P(p)} \right\} \right]^2$$

Therefore, another limiting condition is added to the previously mentioned axiom of additivity:

$$\sum_{i=1}^{K} \lambda_i = 0$$

The parameters that will be econometrically evaluated and analyzed are thus *α, β, γ* and *λ*. In line with the socio-demographic variables that affect the household purchase decision as stated earlier, the parameter α takes the next form:

$$\alpha_i = \alpha_{0i} + \alpha_{size} + \alpha_{age} + \alpha_{gender} + \alpha_{education} + \alpha_{children}$$

where the socio-demographic variables are incorporated as follows:

- Size – number of household members.

- Age – age of the household head stated in five-year intervals.

- Gender – dummy variable that equals 1 if the head is female, 0 otherwise.

- Education – dummy variable that equals 1 if the head finished or still is attending a higher education level, 0 otherwise.

- Children – dummy variable that equals 1 if members of the household are children aged 14 or less.

The parameters of both models were estimated using the nonlinear seemingly unrelated equations (NLSUR) approach by an iterative procedure (Poi, 2008). The NLSUR model is well suited for estimating parameters that influence the quantity of demand because it allows for modelling of systems of related functions simultaneously. Econometric modelling of both demand models has shown that QUAIDS is more appropriate for describing Croatian food demand, therefore, the results of quadratic modelling of food demand have been used in the calculation of demand elasticity. In line with the model, the following elasticities of demand for a set of k goods will be estimated by performing partial derivatives of expenditures with respect to prices and income (Poi, 2012):

1. Uncompensated price elasticity (Marshallian demand elasticity)

$$\epsilon_{ij} = -\delta_{ij} + \frac{1}{w_i}\left(\gamma_{ij} - \left[\beta_i + \eta_i'z + \frac{2\lambda_i}{b(p)c(p,z)}ln\left\{\frac{m}{\overline{m}_0(z)a(p)}\right\}\right] \times \left(a_j + \sum_l \gamma_{jl}lnp_l\right)\right.$$

$$\left. - \frac{(\beta_i + \eta_i'z)\lambda_i}{b(p)c(p,z)}\right)\left[ln\left\{\frac{m}{\overline{m}_0(z)a(p)}\right\}\right]^2\right)$$

2. Expenditure elasticity

$$\epsilon_M = 1 + \frac{1}{w_i}\left(\beta_i + \eta_i'z + \frac{2\lambda_i}{b(p)c(p,z)}ln\left\{\frac{m}{\overline{m}_0(z)a(p)}\right\}\right)$$

3. Compensated price elasticity (Hicksian demand elasticity)

$$\epsilon_{ij} = \epsilon_{ij} + \epsilon_M w_j$$

Research findings and discussion

In regard with the main research question, three supporting hypotheses were implied:

(iii) Socio-demographic household characteristics – it was expected that all the household socio-demographic characteristics are affecting the aggregate food demand system. The results of the Wald test exhibited that each of the five socio-demographic variables has a significant influence on the variability of aggregate food demand at the significance level of 1%.

(ii) Economic household characteristics – it was expected that all the household economic characteristics are affecting the aggregate food demand system. In line with the assumption of this research that Croatian consumers' demand for food can be differentiated depending on the level of consumer income, and that consumer income is a significant predictor of demand, the significance of the lambda coefficient was tested. The results of testing the lambda parameter at a significance level of 1% revealed that there is at least one lambda parameter that significantly influences the demand for food products.

(iii) expenditure elasticities – dividing the sample into quartile classes by income (ie total household expenditure), expenditure elasticities were calculated for each quartile. Furthermore, the statistical testing of the food demand inequality between different income classes was confirmed for seven out eight food groups (all except the meat and fish category).

In conclusion, establishing the econometric model and testing hypothesis, we found that a quadratic almost ideal QUAIDS demand system was more suitable for describing Croatian consumption, and that all three scientific hypotheses were substantially validated.

Expenditure and own-price demand elasticities for Croatian consumers

Food category	Expenditure elasticity	Own-price elasticity	
		Compensated	Uncompensated
Bread and cereals	0,7468	-0,6427	-0,5106
st. err.	0,0175	0,0216	0,0211
Meat and fish	1,2040	-0,8538	-0,4638
st. err.	0,0160	0,0175	0,0164
Milk, cheese and eggs	0,8193	-0,9687	-0,8404
st. err.	0,0196	0,0211	0,0207
Oils and fats	1,1064	-0,5941	-0,5535
st. err.	0,0416	0,0346	0,0345
Fruits and vegetables	0,9904	-0,5526	-0,4225
st. err.	0,0249	0,0205	0,0200
Sugars and confectionery products	1,1092	-0,8035	-0,7429
st. err.	0,0391	0,0220	0,0223
Other food products	1,0240	-0,8953	-0,8546
st. err.	0,0441	0,0262	0,0264
Non-alcoholic beverages	0,9677	-1,0995	-1,0219
st. err.	0,0299	0,0152	0,0154

Source: author's calculation

The calculated elasticities are in accordance with the theoretical principles - it can be confirmed that an increase in income (expenditure) will lead to an increase in demand for all categories of food products. Moreover, the price of the observed good and the quantity demanded are negatively related. Croatian consumers' demand for bread and cereals, milk, cheese and eggs, fruits and vegetables and soft drinks is inelastic. Other product groups are characterized as luxury goods, but there is a weak demand response to a change in income as most expenditure elasticities are estimated to be around 1. Apart from non-alcoholic beverages, uncompensated

demand elasticities for all food groups are inelastic, indicating that Croatian consumers are not ready to respond to a change in price by an equal change in the volume of demand.

Cross price elasticities indicate products that serves as substitutes or complements in the food demand system. If the cross-price elasticity of demand is positive (the results are marked in black), this indicates the groups of goods that function as substitutes. Increasing the price by 1% in the case of substitutes will cause the demand for the observed good to increase. If the cross-price elasticity of demand is negative (results marked in red), the above indicates a complementary good. Increasing the price by 1% in the case of a complement will cause a decrease in the demand for the observed good, since the two related goods are complementary in consumption. In general, the coefficients of elasticity observed in absolute terms are quite small, suggesting a poor correlation between products within the category of food and non-alcoholic beverages. Given the high level of product aggregation, such results are expected.

Marshallian cross-price demand elasticities

Uncompensated cross-price demand elasticities	Bread and cereals	Meat and fish	Milk, cheese and eggs	Oils and fats	Fruits and vegetables	Sugars and confectionery products	Other food products	Non-alcoholic beverages
Bread and cereals		**-0,074**	**0,050**	**-0,044**	**-0,077**	**-0,008**	**0,005**	**0,046**
st. err.		0,018	0,015	0,009	0,012	0,008	0,008	0,008
Meat and fish	**-0,120**		**-0,050**	**-0,008**	**-0,120**	**-0,019**	**-0,020**	**-0,012**
st. err.	0,010		0,009	0,005	0,009	0,006	0,005	0,006
Milk, cheese and eggs	**0,042**	**0,021**		**0,005**	**-0,016**	**0,006**	**0,052**	**0,039**
st. err.	0,017	0,020		0,009	0,013	0,009	0,008	0,008
Oils and fats	**-0,277**	**-0,041**	**-0,026**		**-0,024**	**-0,057**	**-0,093**	**0,005**
st. err.	0,043	0,045	0,038		0,032	0,021	0,021	0,020
Fruits and vegetables	**-0,149**	**-0,225**	**-0,046**	**-0,002**		**0,006**	**-0,015**	**-0,006**
st. err.	0,017	0,023	0,016	0,009		0,010	0,009	0,010
Sugars and confectionery products	**-0,091**	**-0,078**	**-0,029**	**-0,038**	**-0,001**		**-0,032**	**-0,036**
st. err.	0,029	0,037	0,027	0,015	0,024		0,015	0,016
Other food products	**-0,027**	**-0,108**	**0,175**	**-0,083**	**-0,055**	**-0,039**		**0,007**
st. err.	0,037	0,044	0,034	0,020	0,030	0,020		0,019
Non-alcoholic beverages	**0,061**	**0,027**	**0,053**	**0,007**	**-0,007**	**-0,017**	**0,006**	
st. err.	0,018	0,026	0,018	0,009	0,017	0,011	0,009	

Source: author's calculation

Hicksian cross-price demand elasticities

Uncompensated cross-price demand elasticities	Bread and cereals	Meat and fish	Milk, cheese and eggs	Oils and fats	Fruits and vegetables	Sugars and confectionery products	Other food products	Non-alcoholic beverages
Bread and cereals		0,167	0,167	**-0,017**	0,021	0,033	0,034	0,105
st. err.		0,016	0,014	0,009	0,012	0,008	0,008	0,008
Meat and fish	0,093		0,138	0,036	0,038	0,047	0,028	0,084
st. err.	0,009		0,009	0,005	0,008	0,006	0,005	0,006
Milk, cheese and eggs	0,187	0,286		0,035	0,092	0,051	0,085	0,105
st. err.	0,016	0,019		0,009	0,013	0,009	0,008	0,009
Oils and fats	**-0,081**	0,318	0,147		0,121	0,003	**-0,049**	0,094
st. err.	0,042	0,042	0,038		0,031	0,022	0,021	0,020
Fruits and vegetables	0,026	0,095	0,109	0,034		0,060	0,024	0,073
st. err.	0,016	0,021	0,016	0,009		0,010	0,009	0,010
Sugars and confectionery products	0,106	0,281	0,144	0,002	0,145		0,012	0,053
st. err.	0,027	0,034	0,026	0,015	0,023		0,015	0,016
Other food products	0,155	0,223	0,336	**-0,045**	0,080	0,016		0,090
st. err.	0,035	0,040	0,033	0,020	0,029	0,020		0,019
Non-alcoholic beverages	0,233	0,341	0,205	0,043	0,120	0,036	0,044	
st. err.	0,017	0,024	0,017	0,009	0,016	0,011	0,009	

Source: author's calculation

The variation in expenditure elasticities of demand by income quartiles can be analyzed by the data in the table below:

Expenditure elasticities of demand presented by income quartiles

Food category	Croatia	I. quartile	II. quartile	III. quartile	IV. quartile
Bread and cereals	**0,7468**	**1,0339**	**0,9082**	**0,8967**	**1,0689**
st. err.	0,0175	0,0638	0,0475	0,0633	0,0560
Meat and fish	**1,2040**	**1,2394**	**1,1600**	**1,2015**	**1,1455**
st. err.	0,0160	0,0678	0,0512	0,0645	0,0462
Milk, cheese and eggs	**0,8193**	**0,8288**	**0,8424**	**0,8661**	**0,8543**
st. err.	0,0196	0,0728	0,0598	0,0757	0,0593
Oils and fats	**1,1064**	**1,2861**	**1,0806**	**0,9922**	**0,9036**
st. err.	0,0416	0,1795	0,1187	0,1402	0,1229
Fruits and vegetables	**0,9904**	**0,8952**	**0,7296**	**0,6763**	**0,4824**
st. err.	0,0249	0,0963	0,0755	0,0847	0,0744
Sugars and confectionery products	**1,1092**	**0,4116**	**1,1972**	**0,8520**	**0,8863**
st. err.	0,0391	0,1788	0,1150	0,1441	0,1089
Other food products	**1,0240**	**0,8625**	**1,2051**	**0,9079**	**1,1577**
st. err.	0,0441	0,1823	0,1183	0,1747	0,1322
Non-alcoholic beverages	**0,9677**	**0,8836**	**1,0470**	**1,3196**	**1,4012**
st. err.	0,0299	0,1224	0,0840	0,1026	0,0872

Source: author's calculation

The expenditure elasticities of demand display interesting results. The first and fourth income quartiles (ie 25% of the lowest income and 25% of the highest income Croatian citizens) consider bread and cereals a luxury good. Although the indicator of expenditure elasticity is slightly above 1, it is interesting that there is a significant difference in expenditure elasticity compared to the second and third quartiles. Of course, it should be borne in mind that nutrition expenditure is considered as income in this research, and therefore the interpretation should be taken into account. For example, if total expenditures for food items were reduced by 1%, the first and fourth income quartiles would reduce their bread and cereal consumption by 1.03% and 1.07%, respectively, while in the second and third quartiles this reaction would be much weaker. Although this indicator does not reflect the worrying trend in household demand as it is not much higher than 1, it is striking that the richest 25% do not comply with Engel's law.

Due to the very high level of product aggregation, it is difficult to accurately explain the movement of the coefficient, but as a possible explanation, the difference between products in the bread and cereals category is offered. Households in the first quartile are likely to found much of their diet on bread and cereals because of their affordable price, while fourth-quartile households may consume products of higher nutritional value (such as gluten-free bread, whole grains and similar products) that are significantly more expensive.

Meat and fish fall into the category of luxury goods for all income quartiles, with expenditure elasticity being highest in the first quartile. The milk, cheese and eggs category represents a normal good for the Croatian population, and elasticity is relatively stable across all four income quartiles. Oils and fats are more elastic in the first and second quartiles than in the third and fourth quarters. Surprisingly, fruits and vegetables are a must-have for all income quartiles, with the response to the change in the food budget being stronger with the first income quartile and gradually decreasing towards the fourth, as expected. Sugar and confectionery are necessarily good for the first, third and fourth quartile, while other food products are luxuriously good for the second and fourth quartiles. Due to the reduction in food expenditures, non-alcoholic beverages are the most willing to give up members of the fourth income quartile (expenditure elasticity 1.4) and least ready members of the first quartile (expenditure elasticity 0.88).

Final remarks

In general, the discussion of research findings of this thesis was carried out in accordance to the theoretical foundations and models of food demand conducted for other transition and post-transition countries of Central and Eastern Europe that share a similar geo-political, socio-economic, historical or cultural framework such as Slovenia (Verbič et al., 2014), Slovakia (Rizov et al., 2014), the Czech Republic (Smutna, 2016), Romania (Cupak et al., 2014; Alexandri et al., 2015) and Kosovo (Braha et al., 2018). Unfortunately, the research conducted in this thesis reveal three limitations needed mentioning. Firstly, the data used in this analysis is limited to the year 2014 - considering the fact that the recession in Croatia was long-lasting and rather deep, this could have been reflected in household consumption and consequently in the elasticity of demand. For a more accurate and relevant measurement of the effects of price and income changes, it is necessary to take into account a longer period of time. Secondly, since the similar analysis of the food demand has not been carried out in many countries (as has not

been done so far in the case of Croatia), possibility of comparing the research findings is rather limited. Thirdly, we should emphasize that there is also a certain limitation in the form of insufficient information on the geographical location of households due to the use of anonymized data from the Household Budget Survey. Our intuition dictates that the Croatian population has significantly diversified dietary patterns in relation to the geographical location of the household, climate, lifestyle (rural and urban), etc. The availability of such information could significantly contribute to the greater precision and applicability of the demand model.

Overall, in-depth research into the characteristics of household consumption leads to indicators that, in addition to scientific, reveal their practical value. The main findings of the demand system modelling are expenditure, price and cross price elasticities of demand for food products. As a summary of the research conducted, food demand elasticities can be used in science and practice, primarily to predict future trends in demand quantities based on changes in expected values of explanatory model variables such as commodity prices, household income, and other socio-demographic characteristics that explain the model.

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Internet use behavior change – An evaluation under three dimensions: Scholars, Professionals, and Users' perspective

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Abstract

Little is known regarding the change of users' behavior towards websites, influenced by the use of Social Media (SM) and Mobile Applications (MA). Statistical evidence reveals that SM and MA are gaining relevance on the Internet, and the access is increasingly being made through these channels, taking Websites to a secondary place. The goal of this study is to understand the shift in the Internet user behavior by conducting a usability literature review in the three dimensions (website, SM and MA), and follow the perspective of Internet professionals and users in this context. Data were analyzed through text mining (TM) techniques for a comprehensive understanding and search for hidden information and patterns. Result outcome reveals that the research in the health has been under the focus of researchers in the context of usability of website, SM, and MA. A gap in the literature was found in the areas of nutrition and marketing. The study of MA is undeveloped. Internet professionals' reveal resilience on setting SM in the center of the online strategy, showing trust that users will continue to use search engines that will lead them to their website, and that relevance and quality of content will determine the continued use of websites. Users under 31 years old have more propensity to use SM and MA instead of websites to search for a product or service, implying that in the future, these platforms will overcome the use of websites.

Keywords: behavior; website; mobile application; social media; text mining.

1. Introduction

Statistical data has been revealing the increasing use of SM platforms and MA that implicitly end up by influencing the use of Websites.

SM is taking over the Internet experience and reveal characteristics that substitute the traditional website (Nah & Saxton, 2013). About forty-two percent of the global population are active SM users. Facebook alone has over 2 Billion active users (Stats, 2018). The MA paradigm reveals a proliferation of these applications among mobile devices. In the two major MA stores, there are more than two million MA, giving the feeling of there-is-an-app-for-that (Xu, Frey, Fleisch, & Ilic, 2016), ninety percent of mobile time is spent on MA and ten percent browsing (Stocchi, Michaelidou, Pourazad, & Micevski, 2018), exceeding the role of websites on sales influence (He & Liu, 2017). This evidence reveals the growing importance of SM and MA for users and a new dynamic on users, leading to a change in users' behavior when it comes to Internet access.

To outline this behavior change, consider the following scenario:

On my Facebook news feed, I find a post from a friend about his vacations in London, and while reading wonderful comments from other friends who had been there before, I feel compelled to visit London. Since I live in continental Europe, I started to take care of all the necessary arrangements for my stay. To find a place to rent, I use Airbnb MA. To find the best deal to fly and make the respective flight reservation, I use Hopper MA, and the air transportation MA allows me to make the check-in on the previous day of departure. In London, I use Uber´s MA or Spinster SM platform to move around the city. To find the best and closest places to eat and read others' opinions, I use the TripAdvisor SM platform. To know where the best places to visit are and, to purchase the tickets, I use London Pocket Guide MA.

This hypothetical, but utterly real, scenario reveals the plausibility of Internet users to choose SM platforms and MA in their daily lives to access the Internet, rather than using a website.

To understand this phenomenon, this research project aimed to examine the shift in users' behavior when it turns to Internet access by following the academia, professionals, and users' viewpoint. Data was collected through a literature analysis to understand academia perspective, and unstructured interviews to explain professionals and user's point of view. For the academia perspective, Scopus database was the source to find the most relevant articles to support the literature review concerning the usability of the three researched dimensions, while to understand professionals' perspective, unstructured questionnaires were conducted through LinkedIn professionals' SM platform. Users were contacted straightforwardly via email to comprehend their point of view. Collected data was be analyzed through a Text Mining (TM) approach for a comprehensive analysis and search for hidden information or patterns (Moro, Cortez, & Rita, 2015).

To uncover the aim of this project, we divided it into three stages with the following specific objectives:

- **Scholars**: Summarize the fields where usability research has been focusing their efforts in the dimensions of Websites, SM and MA, and suggest promising directions for future studies
- **Professionals**: Understand the professionals' point of view towards the use of retail websites, SM and MA in their online strategy, and what is influencing the increasing use of SM/MA instead of retail websites
- **Users**: uncover what Internet communication channel consumers prefer, within the options retail website or SM/MA, and why do they prefer such a platform.

- **Literature review**

The most important factor that influences consumer decision to reject an Information System is the lack of usability of those technologies, making users feel frustrated with the absence of usability principles (Khasawneh & Kornreich, 2015).

In the search for a product or service, consumers browse the Internet in search of utilitarian and hedonic value. Utilitarian value is associated with heuristics, goal-oriented behavior, risk reduction strategies, and achievement of information search goals, while hedonic value refers to fun, entertainment, and enjoyable aspects of shopping, independently of a purchase occurring or not (Park, Kim, Funches, & Foxx, 2012). Perceived usefulness, ease of use, time, price savings and reliability affect consumer satisfaction (Lee & Kozar, 2006), while perceived playfulness plays a vital role influencing consumer use of an information system, impact behavioral intention and is a motivation for consumers to use a virtual store (Hsu, Chang, & Chen, 2012).

o **Websites**

A website can be used for business communication, perform online transactions, and as a potential client contact. It can be defined as the sum of web pages under an Internet domain that is used to communicate with stakeholders and conduct business transactions (Aksakallı, 2012), where the manager has the power to control the platform and the content.

Several factors influence the use of a website. Success depends on the website quality, which has an impact on consumer acceptance by changing consumers' impression of the company, their perceptions, attitudes, enhances trust, which, in turn, affects the behavioral intention (Hameed, 2017). It is a vital concept in e-commerce by driving consumers' perceptions towards purchase intentions but also has an impact on consumers' perceived playfulness and perceived flow that, in turn, influences satisfaction (Hsu et al., 2012).

System quality, information quality and service quality, comprising both technical and service components, are part of the multi-dimensional construct constituted by website quality. The greater the quality of these three constructs, the higher are the expectations and perceptions of the overall website quality (Hsu et al., 2012) and the chances of maintaining consumer loyalty towards the company (Chen, Huang, & Davison, 2017).

Website quality affects the perceptions, attitudes, and behaviors of consumers. Content quality enhances customer trust (Seckler, Heinz, Forde, Tuch, & Opwis, 2015). Convenience, cost-effectiveness, and control over the service, are motivations that encourage consumers' to finish a purchase (Ahmad & Khan, 2017).

o **Social Media**

The main goal of SM is for communication, self-presence, knowledge sharing, idea exchange, conversation and collaboration (Bucher, 2015), and in this environment, users have been taking advantage of this dynamic to search for information, create valuable and spontaneous content, and using collective intelligence to make their decisions (Alhabash & Ma, 2017). They aim is to be part of real-time participation by solving problems and sharing information.

Others' opinions highly influence consumers, and SM permits access to the opinion of others way beyond their friends and relatives closed circle, expanding the range of people that consumers trust. Ratings and reviews provide comprehensive information about products or services, helping other potential customers to make a final decision concerning their search, and recommendations and referrals minimize the impact of consumers when to choose a product or service that they cannot touch or experience (Hajli, 2015). On SM it is possible to find reviews (e.g., TripAdvisor), ratings (e.g., Foursquare), general information (e.g., Facebook), discounts or coupons (e.g., Groupon), search for a question, answer or advice (e.g., Quora), watch videos (e.g., YouTube), or see pictures (e.g., Instagram), capable of influencing the final consumer.

o **Mobile applications**

Perceived usefulness and compatibility are critical factors for using a MA, while satisfaction and frequent usage are significantly influenced by social aspects, utilitarian, and hedonic values (Hsiao, Chang, & Tang, 2016).

Consumers tend to choose a MA due to a set of key attributes and are used by consumers for both social and professional reasons (Franko & Tirrell, 2012). MA are more dynamic than other media forms, promoting variability and interactivity, unlike traditional media, context-aware, multimodal, universal, and ubiquitous, meaning always-on and always-connected. MA are capable of anticipating and reacting to the consumers' preferences within a particular context (Gerlich, Drumheller, Babb, & De'Armond, 2015). In the context of online transactions, they provide full control over the customer experience and enhance the level of consumer engagement, affecting positively consumer attitude towards a brand (Qin, Tang, Jang, & Lehto, 2017).

The use of a MA to search for a product or service (e.g., viewing videos or photos of products, reading products' descriptions and reading other consumers' opinions) is influenced by consumer learning satisfaction, personal integrative benefits, and hedonic benefits (Alnawas & Aburub, 2016). Consumers feel more positive towards a MA when they are entertaining and useful (Watson, McCarthy, & Rowley, 2013), when they help to complete an action (Taylor & Levin, 2014), and with an information/user-centered style, focusing on consumer attention (Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011).

- **Methodology**

    o **Data collection**

First stage: Academia perspective

The emphasis was set on finding the most influential peer-reviewed journals (Q1 Web of Science - WoS) on the researched dimensions. Scopus was chosen to find relevant literature about the relationship between Website, SM, and MA, since it is one of the most widely accepted bibliographic databases where relevant publications are indexed. The keywords used to create the three queries were collected from the literature

(Fernandez, Insfran, & Abrahão, 2011; E. W. T. Ngai, Tao, & Moon, 2015; Zapata, Fernández-Alemán, Idri, & Toval, 2015) to eliminate the inherent subjectivity associated to a query. The search query was applied and restricted to the most influential peer-reviewed journals. The outcomes provided an aggregate of 309 articles (156 for IW, 83 for SM, and 70 for MA). A manual analysis detected duplicates that were eliminated and led to a final dataset of 302 articles (153 for IW, 80 for SM, and 69 for MA) from 18 journals.

Second stage: Internet professionals' perspective

The sample was based on Internet professionals', and this non-probabilistic sample was contacted straightforwardly via the LinkedIn Professional platform to obtain their perspective towards the relevance of websites, MA and SM platforms in their online strategy, and what are the aspects that make users choose one platform over the other.

LinkedIn groups were considered the best option to find Internet professional, since they gather a community of specialized members from the same line of work, making them easy to find and expecting that they would be willing to discuss subjects related to their expertise. Group members discuss general themes regarding Internet developments, such as hints, strategic plans, techniques, general questions, or digital marketing subjects.

Unstructured interviews were conducted to professionals' who posted articles related to the three dimensions of this study (retail website, SM, and MA) in the comment box of each post. The article editor usually encourages readers to use the comment box for feedback to boost the discussion, build loyalty, and grow their community. The approach begun with a contextualization, providing statistical evidence of the increasing use of SM and MA instead of websites, and then Internet professionals were invited to reply, revealing what is the professional application of such technologies from their perspective and what do they consider to be the leading cause that motivate

consumers to choose one platform over the other. According to their response, further questions were made to maintain the dialogue to get a more detailed opinion.

A total of 127 Internet professionals provided their opinion towards the use of retail websites, SM, and MA in an online strategy, and what is influencing the identified behavioral change.

Third stage: Internet users' perspective

For data collection, unstructured interviews were conducted through email and administrated to Internet consumers. Following a frequent procedure used in social sciences, a convenience snowball sampling was employed (Gravetter & Forzano, 2016). This non-probability convenient sample was contacted to understand consumers' opinion concerning the option that they would take to search for a product or service online, between a MA/SM platform or a website, and the reasons for their choice. After getting their response, it was asked their age and gender. A total of 770 Internet consumers replied and returned the unstructured interviews, providing the dataset of this investigation. The age of the respondents ranged from 13 to 64 years old (M = 35.25 years; 60.1% were from 13 to 38 years old and 39.87% from 39 to 64 years old), 61.8% were males, and 38.2% were females.

o Data analysis

Considering the richness of the data, TM was used in content analysis collected in the three stages. The collection of extensive and detailed articles/opinions provided a meaningful amount of data, justifying the use of TM for the review, in detriment of manual analysis, and eliminating the subjectivity associated with the latter analysis (Milovic & Milovic, 2012). TM approach enables analyzing large amounts of data by searching for hidden information, patterns, or trends (E. Ngai, Xiu, & Chau, 2009). The

experiments were conducted through the "R" statistical software (https://cran.r-project.org/).

The first level of analysis creates a document-term matrix (DTM). DTM provides the frequency of a term, and the number of articles/opinions in that appeared (Moro et al., 2015).

From the package of the R software, latent Dirichlet allocation (LDA) was applied to find a set of terms that often appear together on the collected data. Having the DTM as input, LDA gathers data on the most relevant topics (Moro & Rita, 2018). Using beta (β) distribution from each term of a specific topic, it creates a structure that includes the topics and terms that define each topic (Calheiros, Moro, & Rita, 2017). This structure encompasses topics, terms, and the number of articles/interviews used as sources of a given topic. The correlation between each topic and the respective term is observed by the β distribution (Calheiros et al., 2017).

Figure 1 provides the visual method used for the data analysis.
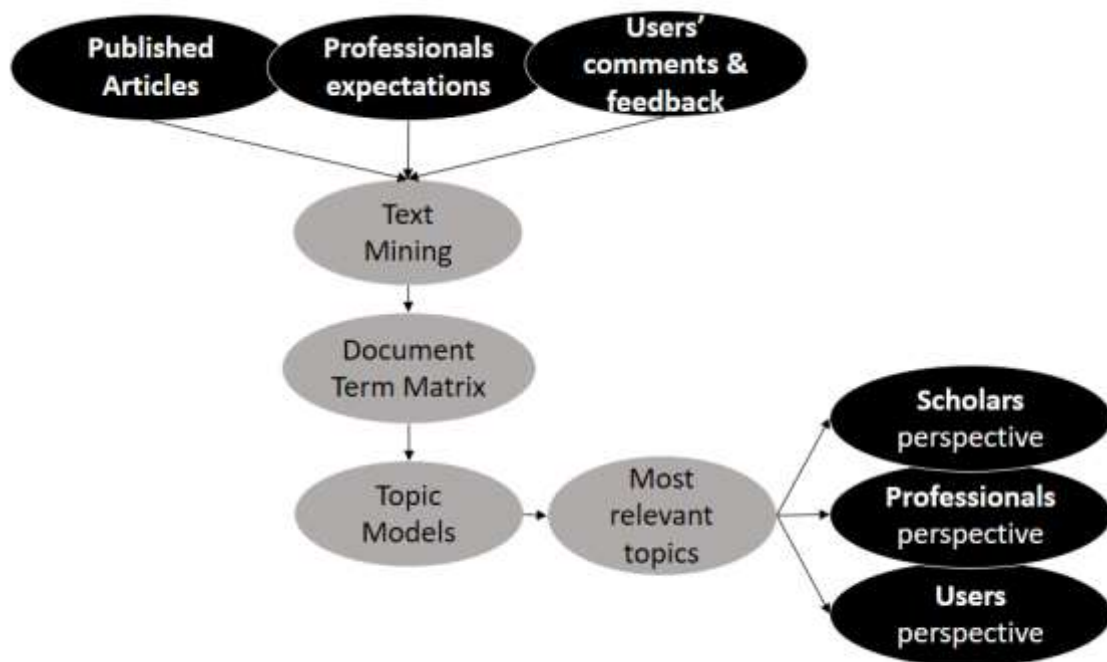
Figure 5 - Method of analysis

- **Discussion and conclusions**

From the analyzed data, relevant conclusions can be withdrawn from this thesis. From the perspective of academia, this research unveiled the following findings:

- The focus of researchers concerning the usability principles of IW, SM, and MA has been in the field of Health. The number of papers published in the Journal of Medical Internet Research (125 from the total of 302) reveals the propensity of health researchers to understand the phenomena that usability has been in the three dimensions;
- Marketing and Nutrition fields reveal a gap in the literature in terms of usability knowledge in the three dimensions;
- There has been a growing interest in the usability technology setting of SM, while usability principles of MA are less focused;

On the other hand, in general, Internet professionals argue that:

- Search engine (e.g., Google) search will lead users to a website, reinforcing their relevance;
- Show resilience to set SM as the center of the online strategy, arguing the retail website is a platform owned by them, contrary to SM platforms, fearing algorithm changes and, for that reason, to lose control and dependent of third parties;
- They argue that users will continue to prefer retail websites if the content is relevant and with quality, contradicting the statistical evidence that there is on the way a behavioral change;

However, the analysis of the data collected from the users' perspective, it is possible to highlight the reasons that make users choose a retail website or a MA/SM platform;

Users that prefer retail websites reveal their reasons:

- Information quality is the reason for such choice, namely, information complete, credible, detailed, trustworthy and reliable;
- Users mention the availability of the product or service in real-time as one of the advantages that retail websites have, compared with SM;
- Users use search engines to find what they are looking for, and the search results often lead them to a retail website;
- Facebook is used as the secondary option to collect others' opinions;
- Users like the integration of SM plugins in retail websites;
- Users reveal resilience of installing MA on their smartphones for memory space reasons;

The characteristics that users highlight to choose a MA/SM platform to search for a product or service are the following:

- Utilitarian aspects of MA/SM platforms are among the reasons that users highlight the preference of these platforms;
- Users prefer MA due to the easiness to use and loading speed;
- Ease to find the searched content and the extra information shared by others;
- Find the MA adapted to their smartphone, practical, navigable, user-friendly, simpler, convenient, feel familiarized with the technology and time saver;

Nevertheless, younger generations reveal more propensity to use MA/SM platforms to conduct their search, in line with previous research (Bilgihan, 2016), indicating that on the long run, these will be the preferred platforms for those who need to undertake an Internet search for a product or service.
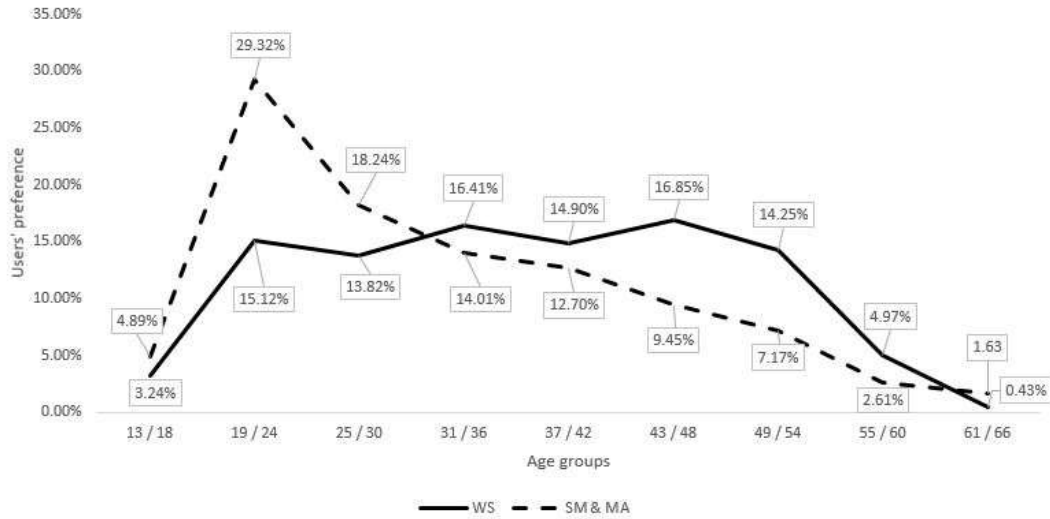
Figure 6 - Age trends

Facing the conclusions from the dimensions of Scholars and Internet Professionals, recommendations need to be addressed to align these two dimensions towards meeting the users' expectations. In terms of research, a usability researcher, to be in the front line in the researched dimensions (website, SM, and MA), must consider the trends and gaps revealed. Taking into consideration the perspective of users, for their work to be considered useful and relevant for academia and professionals, the aspects highlighted by users for their preference and age, need to be taken into consideration.

Internet professionals believe that users will continue to use search engines that will lead consumers to their website. From the users' perspective, this assumption is valid for Internet users with more than 31 years old. However, for users under 31, these assumptions are not confirmed since these age segments reveal a different behavior when to search for a product or service online. Users under 31 conduct their searches on SM and MA. By contrast, findings reveal that Internet users with more than 31 years old act according to the beliefs of Internet professionals. Different generations reveal different behaviors, and companies need to have this into consideration (Bolton et al., 2013). These findings imply that different strategies should be adopted by companies,

according to the age of the target, and should not be generalized, believing that all users conduct Internet searches on search engines.

On the other hand, Internet professionals reveal resilience by setting SM/MA in the center of their online strategy because they would be transferring their online platforms to the hands of a third party. A retail website is a place controlled by the owner while SM platforms and MA make professionals dependent on the platforms' algorithm that determines, for example, the organic reach of a companies' post (Manson, 2014). However, facing the findings of this study, Internet professionals must consider that Internet users are changing their behavior when searching for a product or service. From this standpoint, placing SM/MA in the center of their online strategy can reveal itself as the best option to meet the clients' expectations. These findings corroborate with the study of Li and Ku (2018) that argue that if there are social support and social interactions, they tend to choose social commerce instead of e-commerce, and if their conformity motivation level is high, the behavioral change increases. Recommendations for setting the retail website acting as a hub, transferring users to SM platforms seem to be the best option since it makes it possible for the website to be found via a search engine. Still, after the clients find the website, it is mandatory to have SM plugins that will lead users to the SM platforms where the company has presence, meeting the clients perspectives and demands, and taking the client to a comfortable place, and where they are used to be (Li & Ku, 2018).

Also, results reveal that utilitarian aspects determine the use of MA, namely, simpler, ease of use, convenient, time saver, and adapted to the smartphone. These findings are consistent with previous research that indicates that effort expectancy is a significant predictor of the use of MA, highlighting the importance of easiness (Kang, 2014). The use of SM to search for a product or service is to have access to ratings, reviews, and recommendations. These findings are in line with other past studies that indicated that social benefit and social support influence the use of SM (Li & Ku, 2018). For companies that invest and have an interest in developing an online strategy that includes

SM and MA, it is mandatory to consider the characteristics revealed by users as the ones' that motivate the use of such technologies to please consumers, increase sales, and prosper.

No research to date has directly and empirically studied the Internet behavioral change that is occurring due to the increasing use of SM/MA, and the impact that these changes are having on websites. These findings make a conceptual addition to academia, by revealing the characteristics that are influencing the behavioral change, providing academia the state-of-the-art knowledge regarding the changes that are occurring on the Internet.

For management, these revelations acknowledge that the identified behavioral change has impact on the users' consumer decision, and companies should be aware of these changes, taking into consideration that nowadays, consumers have the power to influence the organization strategy (Aral, Dellarocas, & Godes, 2013). Internet professionals must follow the outline of this study and redirect their policies toward the identified behavioral change to better target and communicate with their audience and market segments.

Concerning limitations, on the first stage, the search scope was restrained to the Scopus database and Quartile 1 ISI Web of Knowledge. In the second stage, only Internet professionals from the LinkedIn groups took part in this study. On the third stage, the unstructured interviews used to collect data was designed for a general data collection and not for a particular product, service, or company.

For future research, it would be useful to map the efforts of the IW, SM, MA usability to provide a thorough analysis of each researched field, and to focus on a particular area of business, product, or service, adding an objective criterion. The collection of a representative sample of the Internet consumers will represent an essential step for understanding more accurately the Internet consumers' choice and the reasons that support such a decision.

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A critical approach to place branding governance: from 'holding stakes' to 'holding flags'

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Abstract

This thesis develops a critical approach to place branding governance. Based on two case studies, the thesis analyses place brand meanings assigned to cities; how stakeholders participate in turning these meanings into action, and why certain stakeholders gain precedence. The results pinpoint to a myriad of functional and symbolic meanings that are shared through a hierarchy of stakeholder engagement and difficult to alter due to the strength of stakeholders' economic, social, cultural and symbolic capital. Drawing on Bourdieu's field-capital theory, the thesis illustrates how stakeholders legitimise their position through city-wide engagement strategies over time, bringing novel theoretical and practical contributions.

Introduction

Place branding is considered more than merely an output, presented through scripted logos, slogans and taglines. It is an ongoing process that is created and consumed by people (Aitken and Campelo, 2011). A participatory approach to place branding focuses on the multiple, dynamic and place-based meanings, images and identities that are consumed and produced by a place's stakeholders (Kavaratzis, 2012). There is a heightened recognition that places belong to a range of stakeholders who live, work, visit, and invest within its boundaries (Merrilees et al., 2012). Taking this stakeholder-orientated approach, success can be attained through enabling stakeholder participation in decision-making processes (Klijn *et al.,* 2012), and encouraging "dialogue, debate and contestation" (Kavaratzis and Hatch, 2013: 82). This constructs stakeholders as partners and co-producers, rather than passive participants (Aitken and Campelo, 2011). While a central aspect of this shift has been encouraging greater resident

inclusion (Aitken and Campelo, 2011; Braun *et al.,* 2013), other studies have also investigated visitors (García et al., 2012), entrepreneurs (García *et al.,* 2012), and business leaders seeking inward investment (Jacobsen, 2012). However, previous approaches largely analyse stakeholders as distinct and separate brand audiences, as opposed to exploring how competing stakeholders develop and communicate multiple versions of complex and evolving places.

Despite the literature recognising this shift, traditional branding practices remain commonplace in practice. Moreover, even when people are brought to the forefront of a place branding process, there remains scant research on how these people interact, participate and compete for input within an increasingly blurred governance structure. This thesis draws on these developments, investigating the varying capacity of multiple stakeholders to participate in an increasingly complex and diffused branding process. Two contrasting case studies of the United Kingdom cities, Bath and Bristol, are used to examine the phenomenon. The case studies consist of in-depth interviews with 60 stakeholders from the business community, local authority, local community and visitor economy, supported by insights from onsite observations and secondary sources. To examine how stakeholders compete for a stake, the thesis draws on three interconnected literatures: the brand meanings literature to explore '*what*' associations, attributes and values are assigned to places by multiple groups; the stakeholder engagement literature to examine '*how*' stakeholders are participating; and finally, applying Bourdieu's field-capital theory (1977, 1984, 1986) to analyse '*why*' certain stakeholders are able to hold more influential stakes in the increasingly complex process.

Theoretical Framework

Previous research has begun to develop a conceptualisation of place branding governance. Notably, Hankinson (2007, 2009) utilised guiding principles derived from the corporate branding literature, devising five antecedents required when managing complex place brands; namely building partnerships, strong leadership, coordination, communication, and a strong brand-orientated ethos. Extending these insights, Hanna

and Rowley (2015) build a model of place branding, whereby relationships between its interconnected components (for example brand identity, brand communication, brand experience, brand architecture) are identified. Other approaches have developed a taxonomy of resident involvement (Aitken and Campelo, 2011), as well as beginning to recognise the power and contestation at play when applying brand governance to geographical areas (Lucarelli and Giovanardi, 2016). Extending these developments, this thesis develops a critical approach to place branding governance, whereby stakeholders' claims, contributions and capacity to input into participatory place branding is evaluated (Figure 1).

Figure 7 Governing complex place brands
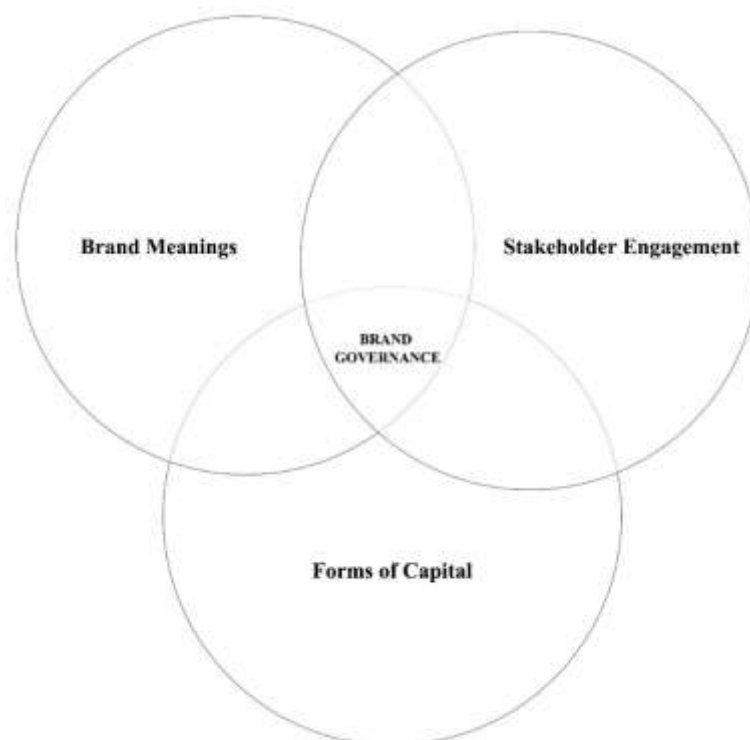
Brand meanings

Brands bring together "a cluster of meanings" (Batey, 2015: 6) underscored by stakeholders' perceptions of their multitude of associations, attributes, benefits and

values (Wilson *et al.,* 2014). These meanings are assigned to brands based on the fulfilment of functional and psychological needs (Wilson *et al.,* 2014). While originating in conventional branding, brand meanings remain an important and underexplored component of place branding. Places are inevitably imbued with unique functional and symbolic assets (Voase, 2012). Stakeholders hold a pivotal role in the negotiation of brand meaning claims (Vallaster and von Wallpach, 2013), with residents' inclusion gaining particular traction (Aitken and Campelo, 2011). Yet, a distinction has been drawn between the involvement of residents in the internal essence of the place brand versus their involvement in the official communication and marketing practices (Aitken and Campelo, 2011). Moreover, with a few important caveats, studies rarely include multiple stakeholders. Merrilees *et al.,* (2012) provides an important exception, wherein the authors demonstrate local community and business community stakeholders' brand meanings can be clustered together using a filtering device.

Gaining a consensus among stakeholder claims is seldom simple for conventional branding, and even less so for place branding. Inevitably, gaps emerge between the official brand meanings communicated and stakeholders' intrinsic claims (Wilson *et al.,* 2014). As such, there is a growing acceptance that brand meanings develop organically and with them come converging and competing stakeholder claims (Green *et al.*, 2016). Yet, it remains difficult to measure and understand how place branding meanings converge or diverge, since the literature lacks an overarching way to measure multiple stakeholder claims (Green *et al.,* 2016). Addressing this gap, this thesis draws upon two established brand meaning frameworks (Batey, 2015; Laaksonen *et al.,* 2006) to develop a conceptual scale that acknowledges brand meanings exist on a continuum from functional to symbolic. This scale is then used to evaluate stakeholders' brand meaning claims.

Stakeholder engagement

Looking at stakeholders' brand meaning claims alone does not capture *how* the different groups are sharing in the consumption and production of these dynamic and multiple meanings. Stakeholder engagement offers a lens to explore these interactions, addressing "the processes whereby stakeholders are identified, their interests surfaced and interactions are managed" (Hanna and Rowley, 2011: 465). Stakeholder engagement provides an arena whereby multiple, and often competing, stakeholder pursuits can be considered in tandem (Hanna and Rowley, 2015). This enables stakeholders to work together to develop a shared purpose and belonging (Govers, 2013). Resultantly, the premise rests on providing stakeholders with a platform to voice their understandings, even when presenting conflicting perspectives (Baker, 2007).

Whilst the bulk of the literature focuses on the potential benefits for stakeholder inclusion, critical approaches to stakeholder engagement are beginning to emerge. These approaches recognise the disjuncture between stakeholders who can foster relationships through engagement and those who remain excluded (Henninger *et al.*, 2016). Moreover, effectively implementing stakeholder engagement is cumbersome, with stakeholder tensions being heightened by place branding's diffused ownership (Hanna and Rowley, 2015) alongside 'lip service' being utilised rather than meaningful participation (Zenker and Erfgen, 2014). Resultantly, despite the academic call for greater inclusion of stakeholders (Hanna and Rowley, 2011), in practice the branding process remains predominately linear and focused around the communication and promotion of slogans or logos (Green *et al.,* 2016). Yet, the literature is failing to consider why stakeholder engagement is failing to incorporate multiple stakeholder claims and what this means for a pursuit of a participatory approach to place branding.

Bourdieu field-capital theory

Place branding remains in its theoretical infancy, with most studies focusing on empirical and conceptual contributions. This thesis utilises Bourdieu's field-capital theory (1977, 1984, 1986) to critically assess why certain stakeholders can participate

to varying extents in the engagement strategies at the heart of participatory place branding. With notable exceptions (see Warren and Dinnie, 2018), this lens remains underexplored in place branding. Bourdieu's composition of complementary theories helps to identify why certain groups can (re)produce, often unconsciously, accepted meanings within a certain social and physical space by drawing on three interconnected components, namely the *field*, *capital*, and *habitus*.

The *field* is the social space where interactions take place and people (agents) compete for status (Bourdieu, 1984). Within these multiple, often overlapping fields, people perform roles, drawing on a mixture of resources to develop and retain a strategic position of influence. Ultimately, the field is the playground where people compete for legitimacy and power. While fields are influenced by external factors, these arenas are also shaped by cultural and societal expectations and norms (Tapp and Warren, 2010). Within these fields, there are a series of players who hold varying positions and influence (Thomson, 2014).

A stake in the field is formed based on the accumulation and conversion of *capitals* (social, economic, cultural and symbolic) (Bourdieu, 1986). Those with ample stocks of capital are better placed to accumulate further capital (Bourdieu, 1986). Therefore, capital operates as the currency that actors collect and cash in when seeking to assert a strategic position (Warren and Dinnie, 2018). Bourdieu places less emphasis on economic capital, emphasising the aligned importance of the sum of social and cultural capital when fostering symbolic and legitimised capital (Bourdieu, 1977, 1984, 1986). Combined, these capacities bring into the forefront of stakeholder participation the importance of economic resources, group membership, networks, associations, nuanced knowledge, education, qualifications, and titles in order to attain honour, prestige and the greatest prize of all, legitimacy.

To understand people's role within the field the relational role of the *habitus* comes into play, which is simultaneously shaping and being shaped by the actors and the context

in which it materialises (Bourdieu and Wacquant, 1992). The habitus offers the guiding principles, dispositions and practices underlying actors' interpretations and positioning in the field. Central to these understandings is the often undetected doxa, covertly legitimising certain attitudes and actions (Bourdieu, 1986). The unquestioning acceptance that certain processes are the way in which the field operates helps to reproduce (often unequal) power relations. In doing so, the doxa reinforces the objective social structures and is evidenced in the practices and perceptions of actors, i.e. their habitus. Together these components help to explain how certain groups of stakeholders within the complex place branding field, use economic, social, cultural and ultimately symbolic capital to attain and retain influence.

Methodology

Two contrasting case studies of Bath and Bristol were undertaken between November 2015 and April 2017. Case studies are commonplace within place branding research (Kavaratzis and Kalandides, 2015), as an under-researched area can be evaluated in-depth (Eriksson and Kovalainen, 2008), enabling inductive and abductive understandings to be advanced in a real-life setting and providing sufficient focus to support theory generation (Järvensivu and Törnroos, 2010).

A social constructionist paradigm guided the research from design to dissemination. The ontological approach acknowledges that multiple, interrelated realities are socially constructed (Lock and Strong, 2010), shaped by the time, place, and culture (Eriksson and Kovalainen, 2008). The epistemological stance views knowledge as constructed, contested and ongoing (Chronis *et al.,* 2012). Alongside these theoretical groundings, the research employed some principles of grounded theory to support the data collection, analysis and abductive development of emergent theory (Charmaz, 2014; Gioia et al., 2013). Incorporating elements of grounded theory is particularly useful when undertaking a critical qualitative inquiry, encouraging a thorough scrutiny of the data (Charmaz, 2014). The guiding principles of grounded theory also allow the data collection and data analysis to occur in tandem. The three-stage approach to data analysis starts with open coding of processes, which helps guide the proceeding interview structures. This is followed by clustering the processes into collective

incidents, and finally these incidents are analysed alongside the existing literature to develop and extend theory (Charmaz, 2014; Gioia *et al.,* 2013). This approach ensures a combination of flexibility, integrity, and depth.

The sample was selected based on the fulfilment of Mitchell *et al.*'s (1997) stakeholder salience model, with stakeholders being selected from the business community, local authority, local community and visitor economy based on their whether they held existing power, urgency, and legitimacy. In total, 60 stakeholders were interviewed, including local authority officials, elected officials, leaders and organisers within tourism bodies, hotel owners, restaurant proprietors, business leaders, city-based entrepreneurs, lobbyists, central organisers and members of resident groups, and key parties responsible for inward investment in the city. To bolster the validity of the research, projective techniques were integrated (Hofstede *et al.,* 2007), particularly focusing on exploring the brand personification to spark discussion relating to the meanings and images associated with the city. The simultaneous data collection and analysis ended once theoretical saturation was reached and the data was no longer pointing to new insights and theoretical constructs (Samuel and Peattie, 2016).

Findings and Discussion

The findings and discussion draw together the conceptual place branding governance diagram set out in Figure 1, identifying the importance of understanding stakeholders' multiple claims, varying contributions and uneven capacities when seeking a 'stake' in the place branding process.

Objective 1: Building an understanding of stakeholders' brand meaning claims

Despite the growing popularity, there remains a need to advance scholarly knowledge of brand meanings within place branding (Green *et al.,* 2016). Responding to these calls, the thesis uses brand meanings as a pivotal ingredient underscoring the direction of the branding process. Through this lens, stakeholders' claims in Bath and Bristol are identified and variations across the stakeholder groups further explored. In particular, the thesis provides an empirical illustration of how brand meanings exist on a continuum from functional to symbolic, resulting in various and interconnected

meanings. To reach these conclusions, Batey's (2015) understanding that brand meanings operate on a scale from functional to emotive is combined with Laaksonen *et al*.,'s (2006) brand meaning dimensions.

The continuum allows different brand meaning dimensions to be examined and the nuanced variations between claims and stakeholders to be investigated. Official place branding strategies often opt for simplicity over nuances (Braun *et al.,* 2017). Questioning this approach, the thesis demonstrates the importance of looking beyond the descriptive stakeholder claims and capturing the multiplicity and multidimensionality of brand meanings. In doing so, the findings show that brand meanings are not purely functional or emotive, consisting instead of a mixture of different layers that manifest in varying ways. Moreover, a key finding from this research is that while similarities exist at the descriptive level, in contrast to the variations that become more pronounced as you travel along the brand meaning continuum. Therefore, by focusing largely on the descriptive dimensions the multiplicity of stakeholder meanings is lost and the branding process is oversimplified.

The findings also demonstrate the interconnectivity of the multiple brand meaning dimensions, with the descriptive brand meanings being used as a base for the attitudinal and emotive responses. In Bristol, this means that its arts and cultural attractions, in particular street art and Banksy, are placed at the helm. In Bath, the focus is on its historic sites and attractions which have gained international acclaim through its World Heritage Status This confirms that unlike branding for conventional products and services that can be separated (at least in part) from the product or service on offer, for place branding the combination of the tangible and intangible infrastructure, brand architecture, protocols and myriad of people is inseparable from the brand meanings assigned (Hanna and Rowley, 2011, 2015; Voase, 2012). There is an inextricable connection between the place as the product and people's connection to it (Aitken and Campelo, 2011). However, these perceptions are difficult to change, with certain brand meanings dominating.

Despite the existence of similarities and convergences in brand meanings, competition remains ripe. These play out in numerous ways, including the dichotomy between modernisation and preservation in Bath and a disjuncture between '*those who have and have not*' in Bristol. Previous research outside of place branding explores stakeholder dissonance (Vallaster and Wallpach, 2013), looking at the way that stakeholders form resistance against brand managers. However, few studies have investigated how conflicting brand meanings play out in place branding. This research illustrates the areas of dissent when consuming the place brand before considering if this dissent is reinforced by variations in stakeholders' ability to produce or change dominant images. Moreover, conflict is most pronounced once you look to the value judgments and more covert emotions. This reaffirms the importance of looking in detail across the brand meaning continuum, as well as highlighting where conflicts emerge.

Objective 2: Stakeholders' participation and contribution through stakeholder engagement

The findings from Objective 2 focus on how stakeholders are contributing to the place branding process through stakeholder engagement. This looks at the process of (re)producing and consuming brand meaning claims. The thesis analyses the tools, approaches and forms of engagement, using stakeholder participation as the currency of success. This calls for stakeholders to actively participate in branding processes and be granted access to the engagement strategies that enable a meaningful contribution. Inevitably there will always be winners and losers. However, the findings suggest that the winners have already largely been decided, since it is dependent on stakeholders' ability to access the strategic engagement process. Applying a process-centred lens to stakeholder engagement provides a way to evaluate stakeholder involvement and better explain the varying levels of stakeholder involvement in place branding. This two-pronged approach provides a way to empirically explore the phenomenon, combined with a critical analysis of what these various processes mean for place branding governance. A taxonomy of stakeholder engagement is developed, showcasing stakeholders' varying access to formal and informal tools, approaches and forms of engagement. Combining this analysis, a hierarchy of stakeholder engagement is

developed (Figure 2) bringing into the question the success of a push toward a participatory approach to place branding (Kavaratzis, 2012), as well as the perceived benefits of engagement for place branding governance (Hanna and Rowley, 2011, 2015).

Figure 8 Hierarchy of stakeholder engagement
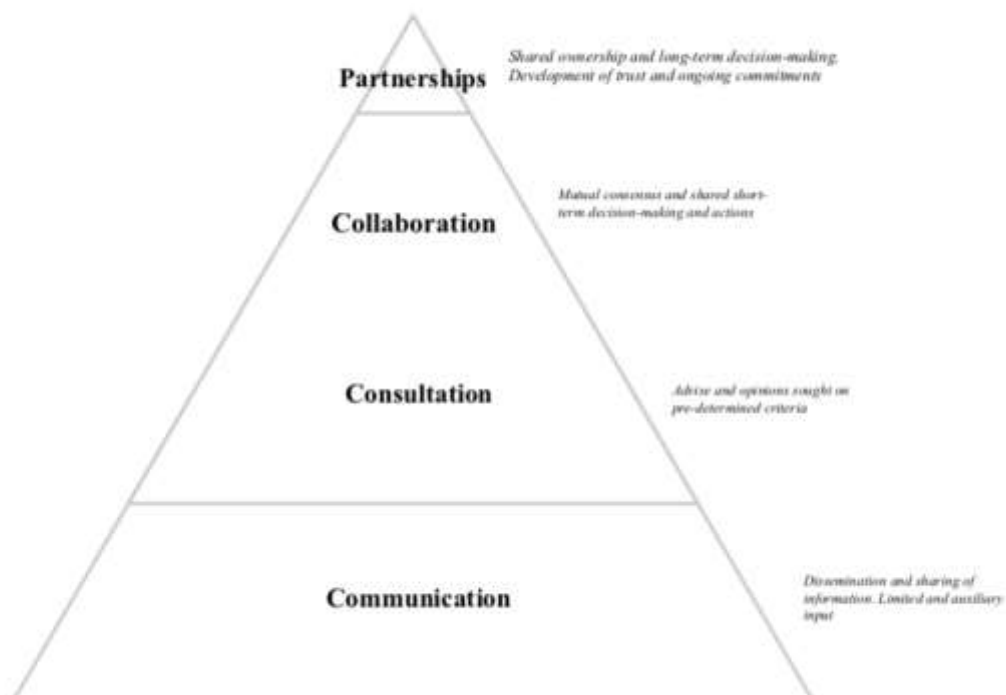
While the place branding literature has begun to question the equality of engagement (Henninger *et al.,* 2016; Houghton and Stevens, 2011), this thesis uses the taxonomy to highlight the discrepancies and examines what this means for stakeholders' involvement in place branding processes. The findings show that stakeholders from the local authority remain prevalent in the higher levels of engagement alongside the business community. The visitor economy remains an important player, accessing the collaborations and to a lesser extent the partnerships. Yet, the local community remain represented in the lower levels of engagement. The outcome is particularly bleak for stakeholders in Bath, wherein the disjuncture between those who have access versus those that struggle to gain more than superficial access is most overt. As a result, while

the necessity of stakeholders' inclusion is considered academically paramount, the advice is not gaining fruition in practice.

The most pervasive form of engagement is often through partnerships, which are often long-term, rather than ad-hoc for a select purpose. The importance and varying scope of partnerships has received attention in the literature (Hankinson, 2007). Yet, the quantity of partnerships remains minimal in comparison to the number of stakeholders seeking active involvement in the process (Hankinson, 2009). This further suggests that partnerships present a guise of a flatter structure, thus reinforcing (at least in part) the façade of involvement (Houghton and Stevens, 2011). This research also showcases the differences between collaboration and partnerships, seeing collaboration as largely short-term versus the prevailing nature of partnerships. This is not to say that stakeholders cannot select the short-term nature of collaboration in preference to longer-term commitment, rather partnerships provide the pinnacle of influence.

In addition to the critical outcomes, some positive are explored. For example, there are means in which stakeholders can navigate the engagement strategies to gain additional involvement, whether it is through the use of informal tools, coordinating approaches behind the scenes or working together to develop long-term partnerships. The subtler forms of engagement present both opportunities and threats to inclusion, since these channels are also navigated by those who command the knowledge and resources to maximise their potential. Despite the benefits, the partnerships are not fulfilling the bottom-up checklist of shared accountability, transparency and ownership (Sztejnberg and Giovanardi, 2017). Instead, the hierarchy of participation remains skewed toward key stakeholders from the local authority and business community.

Objective 3: Explaining stakeholders' varying capacity to participate

The final objective is central to addressing the gaps in the extant place branding governance literature. To explore stakeholder capacity, Bourdieu's field-capital theory (Bourdieu, 1977, 1984, 1986) is applied. The thesis provides a breakdown of stakeholders' possession and mobilisation of economic, social and cultural capital and its translation into symbolic capital. The findings demonstrate the clustering of capital within select groups of stakeholders, most notably the business community and local authority. At the opposite end, the local community is struggling to attain the necessary

capital required to negotiate a favourable position in the field. This application of Bourdieu's theory demonstrates how the possession and mobilisation of capital can explain why certain groups of stakeholders are better equipped to partake in the (re)production of place branding, rather than just its consumption. Moreover, the stakeholder groups who are more pronounced at the pinnacle of the hierarchy of stakeholder engagement (Objective 2) are also those possessing the greatest stocks of capital. Similarly, partnerships are seen to provide the means to share economic, social and cultural capital further helping to explain why certain stakeholders are dominating the engagement landscape. These findings go some way in explaining the gulf between the push for participatory approaches and the reality of continued exclusion in place branding and sparks calls for mechanisms to be installed to promote better inclusion of stakeholders.

The transition of capital into symbolic capital provides the greatest legitimacy and aids the position stakeholders gain in the field (Bourdieu, 1984). The research points to the enhanced legitimacy when the capital is gained across the city (scope) and over prolonged periods of time (establishment). A matrix is developed based on these findings, establishing four stakeholder positions, namely privileged, opportunistic, routine and struggling. This provides an ancillary method of classifying stakeholders involved in the place branding process based on the mobilisation of capital through scope and length of establishment. Moreover, using the matrix, the prevalence of particular stakeholder groups within given stakeholder positions is critically examined. This further points to the over-dominance of stakeholders from the business community and local authority in the privileged quadrant, local authority stakeholders in the routine quadrant and visitor economy between the aspiring and routine quadrants. In addition, stakeholders from the local community are disproportionately located in the struggling quadrant. By identifying the problems facing the local community, potential solutions and means for inclusion can be identified, including equipping these groups with the resources and skills they are struggling to attain.

Conclusions

This thesis draws together the competing claims, contributions and capacity of stakeholders to explain why place branding governance is struggling to translate the rhetoric of greater stakeholder inclusion into reality. The thesis provides novel ways of understanding stakeholders' varying brand meanings and exploring how stakeholders' attempt to translate these meanings into action through stakeholder engagement. Using the Bourdieu's field-capital lens the thesis demonstrates the underexplored role of competition, with stakeholders collecting and using economic, social, cultural and ultimately symbolic capital to gain a stake in the increasingly complex and diffused place branding process. The overarching importance of being able to access and mobilise capital over time and across the city is paramount, helping to explain why certain stakeholders hold privileged positions while others struggle.

Novel practical implications are developed from identifying the opportunities and challenges facing stakeholders involved in the place branding process. Cities provide an important source of tourism and investment, while providing functional and symbolic value to its residents. It is important that stakeholders who possess the capacity to shape the way the city is presented look for ways to encourage resident inclusion, recognising the ethical and authentic significance of capturing a variety of meanings in the presentation of the city. By helping to equip residents with greater access to economic, social and cultural capital, then local authority, business and tourism stakeholders can support a more equitable approach to place branding. Moreover, the thesis demonstrates the mixed role of the local authority, who remains an important actor while sharing its responsibilities with businesses and tourism providers. This provides an opportunity for businesses and tourism providers to capture and influence the dynamic and multifaceted image of cities when promoting themselves to potential visitors, workers and investors.

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Framing the Implementation and Adoption of Innovation in the NHS: An Interactive Multi-User Perspective

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BACKGROUND and CONTEXT

Technology in healthcare has the potential to transform the relationship between patients and health professionals. It can essentially drive improvements in quality, efficiency and population health (Imison et al., 2016). It can revolutionise patient and user experience by facilitating access to relevant information and online peer support (Gretton and Honeyman, 2016). For clinicians, it can translate into reduced effort and time spent in accessing information about patients, and includes benefits such as remote monitoring, improved clinical decisions and support customised treatment plans (Honeyman, Dunn and McKenna, 2016; Ham, Dixon and Brooke, 2012). Healthcare institutions across the globe have benefitted from such a confluence.

The use of technological innovation in the NHS to digitise its system and process has been a long-standing effort and is not new to the country's healthcare system. As far back as the 1960s, the first computer was used for administrative, financial and research purposes (Gove, 1976). The first national information technology (IT) strategy for the NHS was formulated in 1992 (Donaldson, 1992) and was quickly followed by strategies in 1998 and 2002, culminating in the creation of the National Programme for IT (NPfIT). It was also referred to as 'Connecting for Health', the idea was to a) create a single electronic care record for patients, b) to link primary and secondary care IT systems and c) to offer a common platform for health professionals (Britnell, 2015).

NPfIT, known for its multi-million-pound programme of investment, dominated the NHS digitisation agenda from 2002 to 2011, but ultimately failed to deliver on its main objectives, which included providing the NHS with an integrated electronic health record system across secondary care (Wolff et al., 2017). Rigid, centralised decision-making, along with lack of local engagement, failed to capture users' needs and engagement when implementing NPfIT (Watcher, 2016). By 2012, NPfIT had all but ceased to exist, but then in 2013 the then Secretary of State for Health, Jeremy Hunt, challenged the NHS to 'go paperless' by 2018, an ambition further outlined in the NHS five-year forward view (Clarke et al., 2017).

THEORETICAL FOUNDATIONS of the RESEARCH

A rich stream of literature on innovation adoption has been accumulating over the years with scholars contributing to its development from various disciplines. Theoretical cornerstones of innovation adoption studies have, however, been tied together by different editions of Rogers' seminal work (Rogers, 1962; Rogers, 1983; Rogers, 1995; Rogers, 2003). His ideas have permeated most perspectives on innovation adoption, leading to models and explanations best explained through broad classifications and theoretical underpinnings.

Emerging from the economic literature, the first set of explanation on innovation adoption is built on the rational actor model and is one of the most dominant sets of theories in adoption studies (Ansari, Fiss, and Zajac, 2010; Rogers, 1995; Sturdy, 2004). Scholars researching these numerous explanations have focussed on economic theories of rational action when studying innovation adoption. These studies have emphasised the informational conduits through which the technical or economic benefits of innovation are communicated to others as a means to propagate adoption.

These apply unidirectional causations in order to assess the impacts of determinants on adoption of specific innovations (Cooper and Zmud, 1990; Fichman and Kemerer, 1999; Kapoor, Dwivedi, and Williams, 2014; Kimberly and Evanisko, 1981; Prajogo and McDermott, 2014; Rogers, 1983; Tonratzky et al., 1990; Zaltman et al., 1973).

The other prominent explanation emerges from an institutional theory which emphasises the influence of group pressure on adoption. The institutional account sheds light isomorphism that triggers adoption regardless of the innovation's technical, work-related, or economic benefits to the adopter (Abrahamson, 1991; Abrahamson and Fairchild, 1999; Abrahamson and Rosenkopf, 1993; Abrahamson and Rosenkopf, 1990; Bikhchandani et al., 1992; Dimaggio and Powell, 1983; Haunschild and Miner, 1997; Meyer and Rowan, 1977; Suchman, 1995; Tolbert and Zucker, 1983; Westphal et al., 1997).

The more popular perspective however is known as 'diffusion of innovation theory' (DOI) which has argued that the attributes of innovation which potential adopters weigh up during the adoption decision encompass five characteristics: the innovation's relative advantage over its predecessor, compatibility with existing values and past experiences, complexity of use, observability to others, and its temporary trialability (Rogers, 1962). Furthermore, empirical studies using the DOI theory are primarily focused on how technological innovations in the form of concrete products and services are communicated to consumer adopters through various advertising channels such as television, social media, and so on (Bass, 1969; Van Den Bulte and Joshi, 2007). Others, meanwhile, have modelled the diffusion of innovation in homogenous and heterogenous social systems (Chatterjee and Eliashberg, 1990; Gatignon and Robertson 1985).

RESEARCH GAP and OBJECTIVES

Prior studies from all perspectives have significantly advanced our understanding of the macro-level dynamics of innovation adoption. However, the necessary assumptions to advance these perspectives are undergirded by homogenous adoption decisions. Offering us mostly a parsimonious account of the process, prior assumptions of homogeneity become particularly salient at the intra-firm level in complex and high-reliability organisations, such as hospitals and other healthcare institutions. This is because they are characterised by a multiplicity of actors with heterogeneous roles, professional backgrounds, meaning systems, and underlying logics formed throughout their socialization into various working roles (Wright et al., 2017). In such contexts, the dominant macro-level rational and institutional accounts of innovation adoption advocated by prior studies (Strang and Macy, 2001; Teece, 1980; Williamson, 1979; Abrahamson, 1991; DiMaggio and Powell, 1983) do not provide adequate tools or theoretical mechanisms to explore the micro-level socio-cognitive struggles of the adoption process alongside a complex array of stakeholders.

More importantly, these perspectives abstract from the micro-level complexities and the socio-cognitive mechanisms that enable or preclude adoption among heterogeneous actors (Ansari, Fiss, and Zajac, 2010; Garud, Gehman, and Kumaraswamy, 2011). The main issue with both economic and institutional perspectives is the absence of psychological and cognitive effect, which is an inherent reality for any change-related process, including the introduction of new technology. They continue to provide a primarily asocial conception of human behaviour that emphasizes the role of group pressure, which can often lead to the inefficient or harmful adoption of innovation for the organisation (Abrahamson, 1991; Strang and Macy, 2001). These accounts position social pressures as a predominant driving force of adoption. They are typically non-

agentic and abstract from the socio-cognitive minutiae that underpin actors' struggles as they navigate different stages of the innovation process.

To address this gap, my study has highlighted cognition at group level and offered insight on a socio-cognitive process which organisational actors experience during the adoption process underpinning the implementation process. Cognition, as we know, is a reciprocal process that consists of inseparable human behaviour and emotions (Hosking and Anderson, 2018). As such, very little is known with regards to the cognitive experiences of organisational actors that are the targets of innovation. This is on the back of scholars acknowledging that technological innovation and its adoption remains one of the most difficult challenges facing organisations (Rafaelli, Glynn and Tushman, 2019). Adopting a socio-cognitive approach provides an opportunity to emphasise the micro-level struggles of organizational members' sentiments and aspirations encompassing innovation adoption.

ANALYTICAL LENS and FRAMEWORK

To unpack the socio-cognitive complexities of innovation adoption, I have used the notion of interactional framing which is rooted in the symbolic interactionist of Blumer (1971). According to the interactional approach to framing, the symbolic aspects of meaning are negotiated through the ongoing interactions. Framing from an interactionist perspective is a social phenomenon and conceptually it is associated with having two dual characters (Gray, Purdy and Ansari, 2015). Framing: (1) captures the institutionalisation of meaning structures, and (2) provides a macro-structural underpinning for actors' motivation, cognitions, and discourses (Cornelissen and Werner, 2014; p. 29-30). The notion of framing comprises of frames and serves two roles: (1) internal cognitive 'schemata of interpretation' (Goffman, 1974; p. 21) that

allow actors to construct 'sense' in an otherwise meaningless succession of events; and (2) the explicit articulation (behaviour) of an internal cognitive schema that serves as the basis for interaction between multiple actors as they make seek to collectively negotiate sense. From a cognitive perspective, framing is seen as the internal understandings that guide actors' perception of the social realities in which they find themselves and others. Using these ideas, I analyse how actors within complex organisations make sense of the adoption process and answer the following research question

1) How do the interactions between multiple actors lead to new framing activities during the adoption of technological innovation (EMEDs)?

2) What constitutes the framing process and how does it contribute to understanding the adoption of technological innovation involving multiple actors?

METHODOLOGY

The topic of innovation adoption has generated a huge amount of scholarly insights, my research, however, is addressing specific issues within the innovation adoption literature. Having reviewed the prominent strands of innovation adoption literature (economic, institutional, DOI and theories of reason action/behaviour), my research is looking to contribute to the growing stream of research through a socio-cognitive lens. Most of the studies through the lenses of economic, institutional or behavioural perspectives are parsimonious because they are abstract from individual differences to explain the micro-level phenomena (Ansari, Fiss, and Zajac, 2010; Garud, Gehman, and Kumaraswamy, 2011; Mangula, Weerd and Brinkkemper, 2017).

In the NHS context, adoption has been an issue (Heitmueller et al., 2016) and my study would be a step towards addressing the paucity of empirical work in the domain. I am seeking to explore the process of innovation adoption through a disparate group of actors and GT acknowledges the individual and social construction of meanings in which theory generation is inherent. GT is based on an explicit framework for analysis and theory development (Hussein et al., 2017). More importantly, GT has been acknowledged for its credence in healthcare stressing upon the experience and reality of actors involved (Chapman, Hadfield and Chapman, 2015). Considering the complexity of the context contributed by the multiplicity of actors and situational analysis of EMEDs adoption, GT was considered suitable for my research. It allowed for understanding the multiplicity of interactions and having posited innovation adoption as a very social process, GT helped explore the variations within the process (Childress, Gioia and Campbell, 2018).

DATA COLLECTION and ANALYSIS

As per the objectives of the research, I had identified three groups of actors who were central to the process of EMEDs adoption. I spent a number of hours (on top of the time indicated in table (2) below in hospital wards in order to identify actors for the interview.

Table 1: Group of Actors and their role description

Groups of Actors	Description	No. of Semi-Structured Interviews
Group A Non-Clinical Implementers	Actors of this group had technical competencies. They were primarily responsible for drawing up implementation plans, which included identifying and selecting hospital wards most suitable for EMEDs implementation. Following which they arranged for logistics and offered technical help to clinical users.	Deputy Project Manager (1x) Non-Clinical Implementers (4x) Clinical System Trainer (1x) EMEDs System Trainer (1x) EMEDs System Administrator (1x) IT Technician (1x) / *Total number of Interviews = 9*
Group B Clinical Implementers	Actors of this group were clinically efficient. It is important to reiterate that actors of this group can be classed as former users of paper charts. They were temporarily assembled for the purpose of EMEDs implementation and specialised in their respective clinical competencies (nursing, pharmacy, and consultancy). They, however, lacked technical knowledge in relation to EMEDs. They collaborated with members of Non-Clinical Implementers to organise and deliver EMEDs training to clinical users.	EMEDs Senior Nurse (1x) Junior Sister/Charge Nurse (3x) Clinical Implementers (9x) EMEDs Lead Pharmacist (1x) EMEDs Specialist Clinical Pharmacist (1x) EMEDs Lead Pharmacy Technician (1x) Trainee Specialist Pharmacist (1x) Pre-reg Pharmacist (3x) Pharmacy Technician (4x) Lead Doctor (1x) *Total number of interviews = 25*
Group C Clinical Users	Actors of this group were the active users of EMEDs/paper charts in hospital wards. Doctors used EMEDs/paper charts to prescribe medicines to patients. Nurses used EMEDs/paper charts for administering medicines to patients. Pharmacists used EMEDs/paper charts to re-conciliate medicines.	Ward Nurses (x8) Ward Pharmacists (x9) Ward Doctors (x7) *Total Number of Interviews = 24*

Table 2: Time spent collecting data

Activities	Number of Hours Spent
Semi-Structured Interviews (Formal and Informal discussions)	**90 Hours**
Team Meetings	15 Hours
Non-participant observation	90 Hours
TOTAL HOURS	**195 Hours**

Each interview (lasting 15-90 minutes) was audio-recorded and later transcribed. Audio recording allowed me to focus on conversation/data instead of having to write descriptive field notes during the interview. In practicality, the audio recording of the interviews helped me check and authenticate responses. According to May (2003), the presence of a recording device may influence the interaction between participant and researcher. Being aware of this, I negotiated such challenges while conducting all the interviews. Interviews were sent for transcription as soon as they took place. I engaged a professional transcriber whose services are regularly used by healthcare researchers.

The transcribed interviews were analysed using the Gioia methodology (Gioia and Thomas, 1996; Corley and Gioia, 2011). My analysis included three steps of coding which allowed me to distil the interaction between the groups of actors and identify the frames undergirding the transition from paper-based charts to EMEDs (Gioia, Corley and Hamilton, 2013; Lincoln and Guba, 1985). I used an open coding technique and using the interview transcript we started to categorize the data using informants' own language, which led to a myriad of first order codes. These were further filtered, and I distilled around eighty first order codes for each group. I linked these first order codes

to multiple higher order themes using the axial coding technique (Gioia et al, 2013). It was then followed by abstracting first order codes and second order themes into three aggregate dimensions which I also call as frames. My analysis is represented by a single data structure (Clark et al., 2010; Gioia et al., 2013) which highlights the first order codes, 2nd order themes and the aggregate dimensions.

RESULTS and FINDINGS

The three aggregate dimensions that emerged from my analyses, include the *'dynamics of communicating the new technology attributes', the 'mechanisms of infiltrating existing practice values'* to disconnect vested users of paper-based charts and their associated ways of working, and finally the means of 'transitioning to embracing the new technology' that was EMEDs. Figure 1 also depicts the second-order themes underpinning each aggregate dimension and their constitutive first-order concepts. Yet, while the figure provides a static representation of the data, the second-order concepts are an ascending temporal progression of the transition process.

1st Order Concepts

- Assessing wards for first set of implementations
- Suitability of wards depending on how wards have performed in terms of patient care
- Mindful of resistance from users in hospital wards
- Keen to project positive perception about the new practices

- Anxiety and nervousness due to arrival of EMEDs
- People were not sure if EMEDs can do everything
- Things are going to change massively due to arrival of EMEDs
- EMEDs was causing delay in getting the work done in hospital wards

- Papercharts offer systematic ways to look at drugs
- Nurses are familiar with using papercharts and can sometime administer medicines
- Ward rounds are faster with papercharts
- Prefer papercharts over EMEDs during emergencies and time constraints

- EMEDs is helping them with safer prescribing
- Its better than paper because its safer
- There is accountability with the use of EMEDs
- EMEDs do not get lost unlike papercharts

- Wrong medicines have been prescribed due to errors on papercharts
- Doses of medicines have been repeated
- EMEDs was making it easier for everyone to see what has been prescribed
- Papercharts were not to be found in slots/Difficult to find when needed

- Helped to have implementers sit in person and explaining things
- There was support available in all forms from implementers
- Training for EMEDs was provided through face to face interactions and e-learning modules
- Face to face learning was more beneficial

- Successful implementation achieved in difficult wards
- New issues arising while further implementation of EMEDs
- Projecting a positive image about EMEDs implementation
- Additional support through mechanisms of 'floor-walking' and 'hand holding' deployed

- Individuals were taking on new responsibilities towards providing additional training to users
- New initiatives were helping users into understanding EMEDs and practices associated with it
- Individuals were using their clinical experience to engage users
- Helping in redefining responsibilities and practices due to the arrival of EMEDs

- Users were gaining confidence towards using EMEDs
- Hand-holding was being extended to offer more support
- Users saw this as an opportunity to learn new things
- Some nurses now preferred EMEDs over papercharts

2nd Order Themes

- (a) Perceived pathway of efficiency
- (b) Complexity of user landscape
- (c) User resistance, problematization, and rejection
- (d) Projecting the value-based benefits of EMEDs
- (e) Hacking existing practice values
- (f) Disconnecting users from old practice
- (g) Implementation through projecting disconnect
- (h) Sensegiving via defining practice boundary
- (i) Adoption and use of new technology

Aggregate Dimensions

- Communication of new technology attributes
- Infiltrating existing practice values
- Transition to new practice

Figure 9: Data structure emerging from my analysis

I have structured the findings in the following sub-sections according to the three aggregate dimensions and second-order themes. Table 3 provides supporting empirical evidence for each second-order theme and I report the temporal progression of the implementation process in a descriptive narrative with additional supporting evidence.

Table 3: Representative Supporting Data for Each 2nd Order Theme

Second Order Themes	Representative First-Order Data
(a) Perceived pathway of efficiency	"So, we knew that if we wanted to test the implementation of a new way of working, we couldn't have gotten a better ward. It could be more difficult in lower-performing wards. The idea is to prove the technology and new practice" (Deputy Manager). "Yeah, I mean I think it's a similar attitude so from when we were in theatres and working with the anaesthetist. A lot of them were quite reluctant upfront and its finding out and scoping where to sell the performance benefits first" (EMEDs System Trainer).
(b) The complexity of user landscape	"...as an EMEDs team, we have to do all the training but it's so much information all at once, I found that really difficult" (Trainee Specialist Pharmacist). "Doctors, on the other hand, from working on the ward, I remember rolling-out, they seem to think it's timelier in what they do. So, prescribing medicines takes longer than it would do on paper and that's because they're having to use the system, find the medicine, you know do the whole process changes" (Charge Nurse). "Other people who you'd have expected to have just taken to it like that, have been really scared of it and unsure of what they're doing and wanting to ask lots of questions and being, "oh but what if this happens, what if that happens?" (Lead Pharmacist).
(c) User resistance, problematisation, and rejection	"So, that when we make a huge number of amendments to drug charts, the time we spend making those amendments and changing those things is so much greater now than it was, and I think there is a great investment in time, in making sure the drug chart is correct at the outset, the longer that an error is continued in EMEDs the more difficult it becomes to rectify it later on" (Ward Pharmacist). "The advantages at the moment are that I know where to find what medicines are prescribed. So, antibiotics are all together, the regular medicines are all prescribed together, and I suppose you build up over a period of time a systematic way to look through a drug chart so that you know that you've done the right thing" (Ward Pharmacist).
(d) Projecting the value-based benefits of EMEDs	"So, it is kind of safety and the objective is to make sure the medication process is a bit safer. Sometimes prescriptions are incomplete that helps whoever the pharmacist or doctors are prescribing to make it more complete because the system is supposed to guideline you and give you alerts if they say anything" (Clinical System Trainer) So, the thing is that you don't need someone before, you need someone to come all the way. If you call a pharmacy, "can you please give this person medication or add this medication to the person's list," you have to wait like an hour until for the pharmacist to come all the way down to the ward. But now they don't need to come down at all." (Clinical System Trainer).

(e) Hacking existing practice values	"…just clarity, and you can actually read what it says because you frequently couldn't and that's a problem. And things like oxygen, they prescribe oxygen as an anaesthetist coming out of theatre, fine they need oxygen and they do it regularly, but then when the patient doesn't need it anymore or it could have been swapped to when required, or that kind of thing, it's just left and ignored, but it's not actually crossed out on paper chart it's just there" (Lead Pharmacy Technician). "In relation to my role, you no longer have to go around and physically search for drug charts; a drug chart could be with a nurse, it could be with a doctor, pharmacy could have it, it could have gone to theatre. So, there is time saved there not having to search for a physical drug chart" (Pharmacy Technician).
(f)Disconnecting users from old practice	"XXXX was around as well, various other members of the team and staff, they were really helpful, they'd be here until about midnight-ish and then go and then come back, but there'd be someone around if we needed them, so they'd come back for the morning meds round in the morning…" (Ward Nurse). "I was on nights in, over both weeks when they were here, and the EMEDs team were implementing it, and we knew about it, the EMEDs team had brought up laptops and given us all information, our clinical education team had been out and helped us to relieve each other and be able to do the training, for a nursing point of view and the medics were putting session after session on for the medical staff to attend and the consultants were attending and trying to get all the junior staff to go" (Ward Nurse).
(g)Implementation through projecting disconnect	"I think that the other thing that we were worried about was whether it would delay or increase the time that it takes to do certain jobs. It was fairly clear from the literature and what had happened to other people because we went around quite a lot of other places to see what they were doing. Although it did reduce quite a lot of the common errors, it also introduced new errors, that need to be managed, so, although we knew what some of those were, we aren't really seeing them all yet." (Lead Doctor).
(h)Sensegiving via defining practice boundary	"The closer the actual roll-out plans became, the bigger the push was towards EMEDs, you know, your ward sisters told you to do, so I took it upon myself to complete the training quite early on and completing the training compared to medicines on a paper chart" (Junior Nurse). "Basically, we would be there we'd do a drug round with them and then depending on their needs obviously we would either escalate it if they were having trouble or slowly step back and try and give them as much independence as possible" (Junior Nurse).
(i) Adoption and use of new technology	"I think there are some very quick and easy wins to EMEDs. You know that you don't have to transcribe drug chart, its immediately legible. The prescription is clear, and the ability to pick medicines means there is a, it's kind of like a restricted formula" (Ward Pharmacists). I'll say so; I mean, I am quite comfortable now with EMEDs. I got used to it afterwards, you just need to adapt for the better" (Ward Nurse).

1. **Communication of New Technology Attributes**

During the initial stages of my study, non-clinical implementers sought to control how EMEDs was to be communicated to clinical implementers and users with a particular focus on driving frames related to its technical attributes and proposed efficiencies compared to the existing paper charts system. On instructions from the hospital board, non-clinical implementers attempted to build a positive narrative on EMEDs by focussing on technical attributes and its potential to improve the quality of care for patients in hospital wards. As a line of thought, it was considered a popular narrative (by the hospital board), aimed at clinical implementers and users who were genuinely interested in enhancing the quality of care under their watch. On the ground, however, this was initially met with significant resistance and was outrightly rejected by users.

a) Perceived pathway of efficiency

Non-clinical implementers were tasked with drawing up implementation plans, identifying the sequencing of implementation across different hospital wards, and eventually operationalising EMEDs across MEDCO. In drawing up the plans, the non-clinical implementer team first audited each ward and their readiness for EMEDs implementation based on metrics of efficiency and operational performance. As one interviewee stated: INSERT QUOTE 1 (SEE TABLE IN APPENDIX) - (EMEDs Systems Trainer). Another said: INSERT QUOTE 2 (SEE TABLE IN APPENDIX) - (Deputy Manager). High performing wards were seen as a logical first port-of-call as non-clinical implementers envisaged a lower resistance to change and a heightened sensitivity to attributes of efficiency: INSERT QUOTE 3(SEE TABLE IN APPENDIX) - (EMEDs System Administrator). Framing communication and implementation this way was seen as a good benchmark for imitation in other wards and among other users: *Quote 4* (Deputy Manager).

b) The complexity of user landscape

On first interactions in the selected wards with clinical implementers, however, it became apparent that there was unforeseen complexity in the user landscape. Clinical implementers perceived the changes induced by EMEDs to be a huge departure from the existing paper-based system: INSERT QUOTE 1 (SEE TABLE IN APPENDIX) - (Pharmacy Technician). As one interviewee noted: INSERT QUOTE 2 (SEE TABLE IN APPENDIX) - (Trainee Specialist Pharmacist). These perceptions served to fill the group with varying degrees of nervousness and demonstrated the inherent complexity from the perspectives of different clinical implementer groups: INSERT QUOTE 3 (SEE TABLE IN APPENDIX) *(*Lead Pharmacist).

c) User resistance, problematisation, and rejection

Almost immediately following non-clinical implementers communications with clinical implementers, several user groups were being made aware of EMEDs and its functionalities of efficiency. The spread of information in such a manner led to a significant resistance to and problematisation of EMEDs among users. Actors with variable reasons began faulting EMEDs and were quick to highlight issues counter to efficiency: INSERT QUOTE 1 (SEE TABLE IN APPENDIX) (Junior Nurse). Several others exhibit similar resistance and reluctance to move from paper chart practices: INSERT QUOTE 2 (SEE TABLE IN APPENDIX) - (Pharmacist). Users continued to counter and avoid using EMEDs in their everyday work and continued to revert to paper chart practices. The initial experience of EMEDs had added to their workload through changes in how "ward rounds" and inspections were conducted and "longer wait times" for doctors to prescribe and nurses to administer drugs. As one pharmacist stated: INSERT QUOTE 3 (SEE TABLE IN APPENDIX) - *(Pharmacist)*

2. **Infiltrating Existing Practice Values**

By this stage, both sets of implementers were witnessing widespread resistance and problematisation of EMEDs among clinical users of frames that focused on the technical attributes and proposed efficiencies of EMEDs. Non-clinical and clinical implementers, as a result, had to resort to communicating a deeper meaning in order to infiltrate the existing values associated with paper-based charts. These groups thus re-focused their communication efforts towards the values undergirding practices and framed the new practice around issues of patient safety and clinical governance. Then issues around patient safety had various aspects which were being framed for users in order to highlight: i) incidence of adverse drug events, ii) incidence of patient health complications due to the comprehension of medical history, and iii) agreed on workflows in order to manage risks. By highlighting these issues in relation to patient safety, the implementers were able to appeal to those users who were deeply accustomed to the values of paper charts as well as being connected to patients in hospital wards. Issues around clinical governance were being associated with: i) visibility of centralised data sets, iii) improved risk management, and iii) visibility of clinical decisions. These issues appealed to those users who used paper charts to regulate the clinical processes and operational performances in hospital wards.

d) **Projecting the value-based benefits of EMEDs**

Non-clinical implementers met various other stakeholders to gain insights into the deeper rationales and values of users to frame the adoption of EMEDs in their respective wards. Given the resistance and rejection of EMEDs among clinical user groups, it was imperative that non-clinical implementers started to project and communicate the benefits of the new ways of working to both

clinical implementers and users beyond efficiency. It was a move which worked well to allay some of the fears which actors experienced. Non-clinical implementers met various other stakeholders who highlighted the good things EMEDs could do in the context of more fundamental values associated with patient safety and health-related outcomes. As one interviewee pointed out: INSERT QUOTE 1 (SEE TABLE IN APPENDIX) - (Deputy Manager). Patient safety within the hospital ward had been a burning issue, to which the majority of the clinical workers were able to relate. For non-clinical implementers, it came down to stimulating the notion of (quality) care through patient safety. To this one of the interviewees noted, INSERT QUOTE 2 (SEE TABLE IN APPENDIX) 2 - (Project Support Officer).

e) Hacking existing practices values

Building on the new value-based framing that was the outcome of interactions between non-clinical implementers, clinical implementers now focused their attention towards hacking existing paper-based practices by discrediting them as a breach in core values of patient safety. Regarding this, one of the pharmacy technicians noted that: INSERT QUOTE 1 (SEE TABLE IN APPENDIX) (Pharmacy Technician) In another instance one of the interviewees noted that paper charts were not ideal in a lot of ways, INSERT QUOTE 2 (SEE TABLE IN APPENDIX) (Junior Nurse). Given the consensus and demerits of paper charts, actors within the clinical implementer group started to embrace EMEDs and its potential benefits. Working closely with non-clinical implementers, clinical implementers made efforts to learn the nuances of the new practice and make connections to their specific user group: INSERT QUOTE 3 (SEE TABLE IN APPENDIX) - (Junior Nurse). Their acclimatisation and acceptance were critical in propagating EMEDs within the hospital and communicating the specific value-based frames for different users. By this stage, the clinical implementers were beginning to embrace EMEDs which served well for the

project implementation and its propagation of the technology itself in the hospital.

f) **Disconnecting users from the old practice**

For clinical users, the discrediting of paper-based practices against core values of patient safety and comparison of EMEDs as a new value-laden practice was critical. It served as a means for disconnecting themselves from old ways of working. Through awareness and training, users were being introduced to ways of working that were positioned as being safer for patients and healthcare outcomes. To this one of the interviewees noted, INSERT QUOTE 1 (SEE TABLE IN APPENDIX) 1 (Senior Charge Nurse, Critical Care). Prior to EMEDs, users often struggled using paper charts in terms of their legibility, which made them more a safety risk. The juxtaposition of EMEDs at the value level of practice, therefore, disconnected users from old ways of working. As one respondent noted: INSERT QUOTE 2 (SEE TABLE IN APPENDIX) *(Ward Doctor)* With EMEDs, clinical users were starting to see lots of other benefits which was noted by one of the interviewees, INSERT QUOTE 3 (SEE TABLE IN APPENDIX) (Junior Doctor, Anaesthetics and Intensive Care).

3. **Transition to New Practice**

By this stage, clinical users were warming to the new practices induced by EMEDs and the values of patient safety made them feel comfortable with the change. The context was beneficial for non-clinical implementers to stimulate its widespread adoption throughout the hospital. This was predicated on the communication of value-based benefits through clinical and user sponsors that framed and juxtaposed the deficiencies in old ways of working with the new technology through collaborative efforts. The important thing to note at this point was the transformation on part of every group as

they interacted with each other. The implementation strategies employed by non-clinical implementers had evolved by this stage which also brought about the change in their attitude. Their approach towards implementation was more informal as opposed to how it began initially. Elements in their approach reflected more risk-seeking behaviour. For clinical implementers and users, the transformation was represented more in terms of how they perceived the new technology in comparison to paper-based charts. The communication of value-based benefits persuaded the clinical population within the hospital to embrace the new technology and its associated practices.

g) **Implementation through projecting disconnect**

After the first few tests run of EMEDs, it came down to the actual task of implementing throughout the hospital. Non-clinical implementers were keen on projecting that EMEDs was not a major transformation in the primary purposes and values undergirding their practices. To this one of the interviewees noted INSERT QUOTE 1 (SEE TABLE IN APPENDIX) (Project Support Officer). With EMEDs, non-clinical implementers were particular in communicating how aspects of prescribing would continue to remain the same. More importantly, communicating these attributes led to EMEDs being adopted more easily across the hospital wards. This was reiterated by another interviewee, INSERT QUOTE 2 (SEE TABLE IN APPENDIX) (System Trainer). Besides pursuing that line of communication, it was interesting to observe the change in implementation strategies. By this stage, non-clinical implementers were also being driven by the need to finish the project. To this one of the interviewees noted, INSERT QUOTE 3 (SEE TABLE IN APPENDIX) (Deputy Project Manager).

h) **Sensegiving via defining practice boundary**

With the newly acquired affinity towards EMEDs, clinical implementers helped non-clinical implementers with various aspects of execution. Although mostly assigned training duties, clinical implementers were taking initiatives and were

utilising their clinical experience to establish strong communication with clinical users, INSERT QUOTE 1 (SEE TABLE IN APPENDIX) (Project Nurse). Through initiatives, clinical implementers were attempting to own the process of implementation and dictate how aspects of EMEDs were to be communicated to clinical users. They were resorting to unconventional ways to help clinical users to learn about EMEDs. To this one of the interviewees noted, INSERT QUOTE 2 (SEE TABLE IN APPENDIX) (Pharmacist, Surgical team). In addition, clinical implementers started to evaluate and redesign the overall implementation according to the nuances of their particular domain of expertise. For example, one of the specialist clinical pharmacists noted that: INSERT QUOTE 3 (SEE TABLE IN APPENDIX) *(specialist clinical pharmacists).* Clinical implementers through their interactions, therefore, set the parameters for using the new practice to assist in the adoption of EMEDs. They were exploring avenues in order to ensure that others in the hospital ward were making progress in terms of understanding the nuances of EMEDs. Their interaction with clinical users on a daily basis had allowed them to understand the concerns which were holding back the users in hospital wards. To this one of the interviewees noted, INSERT QUOTE 4 - (SEE TABLE IN APPENDIX) (Clinical System Trainer).

i) **Adoption and use of technology**

By this stage EMEDs, despite some early resistance, was being communicated in a positive light to the clinical user group by clinical implementers. To this one of the interviewees noted, INSERT QUOTE 1 - (SEE TABLE IN APPENDIX) (Clinical Pharmacy Team Leader). This positive reaction towards EMEDs was, in part, due to the various forms of training and learning that allowed them to feedback and continually refine its use and align it to primary values of patient safety. To this one of the ward doctors noted, INSERT QUOTE 2 - (SEE TABLE IN APPENDIX) *(Ward Doctors).* The benefits of working

with EMEDs was being noted all around but, more importantly, the clinical users were embracing it for its role in improving the quality of care in hospital wards. As one nurse noted: INSERT QUOTE 3 -(SEE TABLE IN APPENDIX) *(Ward Nurse).* For some, it was also an opportunity to re-learn some of the practices associated with prescribing medicines. They were revisiting their professional practices which included changes in how medicines were being administered, prescribed or reconciled. This was highlighted by one of the ward pharmacists, INSERT QUOTE 4 - (SEE TABLE IN APPENDIX) *(Ward Pharmacist)* More importantly, the users were integrating the new practice in their daily routine and had oriented themselves towards fully adopting EMEDs across the hospital.

DISCUSSION AND CONCLUSION

My data structure (Figure 1) is a static representation of the key concepts that have emerged from the study, Figure 2 however is a dynamic depiction of the model of transition and a processual depiction of how the adoption has been framed. Contextualising the interaction between the three groups of actors, the model illustrates framing as a conceptual point of departure. Framing as noted serves two roles: (1) internal cognitive "schemata of interpretation" (Goffman, 1974: 21) that allow actors to construct 'sense' in an otherwise meaningless succession of events; and (2) the explicit articulation (behaviour) of an internal cognitive schema that serves as the basis for interaction between multiple actors as they seek to collectively negotiate sense. The notion of framing includes the frames of reference for organisational actors and they are key to organising and shaping actors' interpretations of events and organizational phenomena (Weick 1979b).

FIGURE 2: Grounded model of innovation adoption
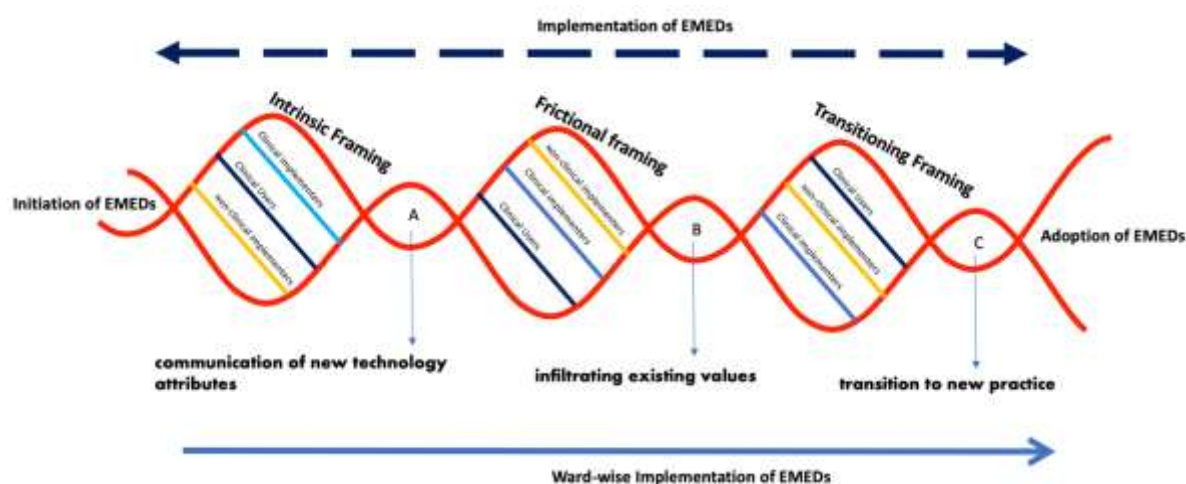
My grounded model suggests that interactive framing is an important subprocess within the adoption process of EMEDs, pivoting the cognitive transformation of actors around the new technology. The shared cognition around technology as suggested by Orlikowski and Gash (1994; p. 33) is an effective means to investigate and assess the impact of technological innovation in organisation. The model illustrates three framing activities: intrinsic, frictional and transition. These framing activities represent the shifts in the cognitive transformation of actors. The cognitive transformations of actors are linked by three critical landmarks which together represent the socio-cognitive roadmap for actors. These landmarks not only succeed the framing activities at each step but also serve to link the activities together - "(a) Communication of new technology; (b) Infiltrating existing values, and (c) Transition to new practices make the framing activities salient.

As soon as EMEDs is initiated in a hospital, actors engage in what is being referred to as intrinsic framing. Framing around the technology is rooted in socio-cognitive research which has examined collective cognitions and social constructions of technology (Bijker, 1987; Bijker, Hughes and Pinch, 1989; Henderson, 1991). According to this stream of research, members of the social group interactively come to an understanding about a) the knowledge of the technology in question, and b) local

understanding in the given setting. The meaning and significance of technology have been described in the context of its use and users. At this stage, when the majority of the population in the hospital were still unaware of the technology, non-clinical implementers were operationalising and formalising plans to equip hospital wards with the new technology. These plans were, however, being remodelled and renegotiated following their interactions with the other groups of actors. For clinical implementers and users, it was a case of projecting their allegiance to paper-based charts (old system) which had been in use at the hospital for a very long time. Both these groups negotiated the initial stages of EMEDs operationalisation through projecting the issues with the new technology. This was mostly due to the lack of exposure and being unaware of what EMEDs offered in terms of its attribute. Their resistance was inherent at this stage and was reminiscent of reshaping implementation objectives on part of non-clinical implementers and resistance on part of clinical implementers and users. These types of framing especially around technology have a strong influence on actors' assumptions, expectations, and role of technology (Noble, 2017; Bijker et al.,1989; Orlikowski and Gash, 1991). It also determines the context regarding the use of technology, especially because technologies are social artefacts and they embody objectives, values, interests, and knowledge about the technology (Orlikowski and Gash, 1994).

CONTRIBUTIONS of the RESEARCH

My analysis deconstructs the socio-cognitive transformation associated with the process of adoption. For scholars, I offer a process model that contributes to the growing body of socio-cognitive perspectives on adoption studies (Ansari, Fiss and Zajac, 2010; Compagni, Mele and Ravasi, 2015; Kennedy and Fiss, 2009; Rafaelli, Glynn and Tushman, 2019; Röth and Spieth, 2019; Zaman et al., 2018). Built on the heterogeneity of multiple actors and irrationality of decisions amongst them, the analysis offers a multi-group perspective on the process. For practitioners, I offer

insights into the challenges of the adoption process faced by different stakeholders in a complex organisation and provide a framework that implementers can use to help account for the complexity in the innovation adoption process.

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APPENDIX

Aggregate Dimensions	2nd order Themes	Quotes Supporting statements on 2nd order themes
1. **Communication of New Technology Attributes**	a) Perceived pathway of efficiency	**Quote 1** - "We go to the ward, tell them what we are coming to do, how it is going to work technically and emphasize the benefits, and how we will support them for preview and rolling out" EMEDs Systems Trainer **Quote 2** - "We do a thing called 'Ward Health Check', it's an indicator of how good you are on your medicine management, how good you are at infection control, on your patient complaints" (Deputy Manager). **Quote 3** - "Well, I like to position them as benefits rather than objectives. [EMEDs] is a better way of prescribing drugs as communicating [patients'] drug needs are more concrete… like, it shows you that this drug has been prescribed before. So, the objective is to make sure the medication process is easier for users" (EMEDs System Administrator). **Quote 4** "when they [users] say it won't work for us [ward], it's like well it can work for you because we've proven it elsewhere" (Deputy Manager).
	b) The complexity of user landscape	**Quote 1** - "…my perception is that nurses are cautious, there is a lot of anxiety associated with it and that's understandable because we've been using paper charts forever" (Pharmacy Technician). **Quote 2** - "When initially I first saw the electronic prescribing, I was like, 'okay what am I looking for, what am I picking up?' On a paper chart you know straight away what you need to look at because you start from the top and go work your way through, whereas obviously with the electronic system, everything's all over the place" (Trainee Specialist Pharmacist) **Quote 3** - "I did spend a couple of hours up on the surgical ward using it and everyone we came across had a problem that nobody seemed to be able to resolve. So, it made me more nervous, because there was EMEDs support up there and that still, things were not clear" (Lead Pharmacist).
	c) User resistance, problematisation, and rejection	**Quote 1** - "I think that's what people are worried about because people have had so many medications here. It's not like on the ward where you do medicines at 8, 12, 6 and then 10 o'clock at night. You can be doing medicines non-stop with EMEDs" (Junior Nurse). **Quote 2** - "everyone grows up writing, so the use of a paper drug chart is absolutely intuitive" (Pharmacist).

			Quote 3 - "seeing patients takes an incredible amount of time and as you become faster and more used to the system it speeds up but, I don't think we would ever get it back down to the speed when it was being written."(Pharmacist)
2. Infiltrating Existing Practice Values	d)	Projecting the value-based benefits of EMEDs	Quote 1 - ".... we changed tact and started to push EMEDs as a clinical concern to users around issues patient safety.... [EMEDs] offers tremendous benefit here but some don't realise what they are getting out. So, for like prescribers the clinical decisions are part of what the system does and all that kind of stuff is really helping them be safer with their prescribing and there's allergies constantly there for the lifetimes of the patients, so the risk of missing allergies is reduced" (Deputy Manager). Quote 2 - "So it is kind of safety and the objective is to make sure the medication process is a bit safer. Sometimes prescriptions are incomplete that helps whoever the pharmacist or doctors are prescribing to make it more complete because the system is supposed to guideline you and give you alerts if they say anything. And sometimes, you know, when patients miss medications, it's just more about patient safety. So, it's just like making sure that people get their medications on time, maybe if they are not getting those medications on time there is a way of recording this on the system, so it's more safety and auditing. You know what they've had and what they haven't had and when they had and who'd given." (Project Support Officer).
	e)	Hacking existing practices values	Quote 1 - "the nurses having talked to them had read it [prescribed the wrong drug] because it was prescribed so poorly." (Pharmacy Technician) Quote 2 - "There is no sort of safety net or level of interacting with the drug chart that can be monitored. So, there's problems there, a lot of the time when you pick up a drug chart it wasn't written very well, it didn't follow the whole principals of the medicines management code, so then you had to then spend time in your day chasing other people up to then re-write the medicines and you know, review the chart. They used to go missing, they used to get lost a lot" (Junior Nurse). Quote 3 - "Yeah, I am more of a "hands-on" person, I need to see and do it myself to learn. So, I was given access and think that probably from the next day, I was a bit more into contact with using it, so that's how I learned to do it" (Junior Nurse). Quote 4 - "I think there are definitely some advantages: I think it is safer, I think it is, like I said earlier, the audit trail is better, I think, cause my role as educational trainers we have to be mindful of how we train people on EMEDs..." (Pharmacists in Education and Training).

	f) Disconnecting users from the old practice	**Quote 1** - "I was on nights in, over the both weeks when they were here, and the EMEDs team were implementing it, and we knew about it, the EMEDs team had brought up laptops and given us all information, our clinical education team had been out and helped us to relieve each other and be able to do the training, for a nursing point of view and the medics were putting session after session, for the medical staff to attend and the consultants were attending and trying to get all the junior staff to go.." (Senior Charge Nurse, Critical Care) **Quote 2** - "I think with EMEDs it is much better… you've got a proper document of all the medications; you can access GP records as well and bring up the past medications. They obviously don't easily get lost either" (Ward Doctor). **Quote 3** - "There are certain things I think EMEDs will improve, so for example, things being legible, so you can always obviously read it because it's already typed for you, and it obviously flags up if it thinks the dose is wrong, or somebody's had a dose or something and if you're not sure how to prescribe things it gives you set things. So, for example, here they use hemofiltration, like dialysis and you need to prescribe Lithium, I would never know how to prescribe it but on EMEDs its already set up, it's got the set dose for hemofiltration which is helpful. So, there's certain things which are helpful for EMEDs, and like once you get, once you get used to it, so for in theatres you always prescribe like painkiller things post operatively, and it's easy after you've done it a few times cause there's all, you know where they are set down, set lists are" (Junior Doctor, Anaesthetics and Intensive Care).

3. Transition to New Practice	g)	Implementation through projecting disconnect	**Quote 1** - "…it was essentially paper chart but on a system. Just literally electronic tick boxes and things. So, it wasn't until getting to know the system a bit better, the rest is really, there is a lot more to it than that. I thought, it was literally just a checklist because, I think, coming from a non-clinical background definitely didn't appreciate how much detail goes on to medical charts" (Project Support Officer). **Quote 2** - "…because we weren't changing the meaning of the process even though we were replacing it with something new, it stayed the same so doctors prescribe, nurses administer, and pharmacists order and review drugs all for purposes of patient care and safety. EMEDs is a better way of serving this purpose" (System Trainer). **Quote 3** – "… we take more risks than we did; we were very cautious at start. We had multiple people on multiple shifts all the time, doing really intense 'hand-holding' whereas now we are a bit more relaxed about it as we know that nobody died yet and so we're probably not going to kill somebody. It's alright the system works, so everything is fine. So, we just need to just be pragmatic about stuff more and I think we are more pragmatic, and I think the support level we've just given to our recent go live ward J-23, so we did that ad-hoc. We only give them support from 8 am to 7 pm. That is our lowest level of support that we've ever given, so I think that is kind of an indication that we're, we don't need 'hand-holders' much" (Deputy Project Manager).
	h)	Sensegiving via defining practice boundary	**Quote 1** - "So, you'd go along and even though I couldn't deliver the training myself, I could assist, with showing them where things were on the system, so I could put EMEDs into the context of our work" (Project Nurse). **Quote 2** - "I write a newsletter to try and explain to them like, little bits and pieces, so giving them all the information all at once at the beginning, we're kind of obliged to do, but you're never going to remember it all, are you?" (Pharmacist, Surgical team). **Quote 3** - "they need to understand how a prescriber adds medicines to the chart. They need to know all about their own processes for pharmacy, you know ordering and clinical review of the prescription and they also need to know a bit about how nurses administer and what the record is telling them. So, the pharmacy staff, in particularly pharmacists, need a much broader overview of, an actually that really hard, because what we found with face to face training, was that, it introduces people to what the system looks like and what the screens look like and what the functions are, but until they use it in a clinical setting, they can't, they can't make sense of

		how it applies to their practise." (Specialist Clinical Pharmacists)
		Quote 4 -"They don't like doing that and they don't like anything that involves a swirl going on and we all know that you know, some IT systems, sometimes they upgrade you and they don't have the developers they need, everyone's under pressure" (Clinical System Trainer).
	i) Adoption and use of technology	**Quote 1** - "I think there are some very quick and easy wins to EMEDs. You know that you don't have to transcribe drug chart, it's immediately legible. The prescription is clear, and the ability to pick medicines means there is a, it's kind of like a restricted formula I guess, where you have doses attached to a medicine as opposed to you have a medicine and then you create a dose, and with decimal points, things like that, they were errors that were occurring previously as well and they were, they disappeared overnight " (Clinical Pharmacy Team Leader). **Quote 2** - "I think it's nice because you can see everything there, there with a paper chart you run out of space and then you have a second or a third paper chart there and I think is you've got one on the go, then you're going to run into missing something so you've always got to keep going back and re-writing the chart. So, I think it leaves a lot open for error to occur that way […] with EMEDs system, you have a track of what's been given. I think on some of them, if you wanted to change, say, they're already on oral Paracetamol, for a post-op anaesthetic patient, you have the option to do a PO or IV […]". (Ward Doctors) **Quote 3** – ""we're making less errors, then even if it's taking us longer to do them, that's a positive…" (Ward Nurse) **Quote 4** - "It is kind of totally re-learning the way that we do thing… and had been trained to do things and how your professional practice had evolved over a number of years. You kind of hit a reset button and really think about how you were doing things again. So yeah, I think re-learning the practice that you've learned."

Identity construction work of migrant workers and consequences on job-related outcomes

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Abstract

This study has two objectives: Firstly, to develop a coherent theoretical model of identity construction - how Chinese migrant workers construct their identities by negotiating with the constraints of life choices in the urban working context. Secondly, to determine how the components of identity construction influences different job-related outcomes. The thesis takes a lead in interpreting the relationship among identity motives, identity components and job-related outcomes through the lens of structuration theory. It contributes to knowledge about the unsolved puzzle that has concerned academic and practical fields, "Why migrant workers have low subjective well-being, job motivation and job commitments."

Introduction

As the Chinese migrant worker population totaled 286 million[8] in 2017, the study of migrant workers has great significance. Migrant workers provided the blood, sweat and tears of China's economic miracle. However, they face a formidable set of institutional barriers in their attempts to succeed in city. Hukou, (a system of household registrations in China), bars migrants from certain jobs and prevents access to health care and education for their children. While Migrant workers struggle in the urban areas with the constraints of life choices, the manufacturing factories who mainly hire migrant workers have problems with employees' high turnover rate, low job motivation, low job commitments and a low level of well-being. More seriously, the new generation migrant workers who were born since 1980 appear to be one of the most dissatisfied segments of Chinese society (The Economist, 2018). While Whyte (2014) regards China as a dormant volcano, the media cautioned that migrant workers may be "the colossal hidden threat to China's future social stability" (The Economist, 2018). Thus,

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[8]http://www.stats.gov.cn/tjsj/zxfb/201804/t20180427_1596389.html

to study migrant workers is highly significance for both the sake of migrant workers' well-being and China's sustainable development. Drawing on an inductive, qualitative study, this thesis aims to develop a coherent theoretical model of dagongzhe[9] identity construction work showing how Chinese migrant workers construct their identities by negotiating with the constraints of life choices in the urban working context. Additionally, how the components of identity construction work differently to influence job-related outcomes will be explored.

Literature Review

The literature about migrant workers have unfolded in firstly, sociology and secondly, organizational behavior.

Sociology: While structure analysis and social networking analysis are the two methods of analysis framed in sociological migrant workers studies, social capital, social cohesion, social categorization plus perceived inequity and injustice are commonly discussed. But this research is fragmented with a lack clear articulation of the temporal dynamics involved. It remains unknow how migrant workers construct their dagongzhe identity after they move from rural to urban areas. More importantly, researchers in sociology give no consideration to the current overwhelming problems confronting many organizations. In other words, little is known about the hidden antecedents of their job-related outcomes.

Organizational behavior: The objective of ongoing research is to determine critical issues including, subjective well-being, life satisfaction, social support, self-esteem, human capital, acculturation strategy, social identity, and inequality. Unfortunately, this wide-ranging research is based on quantitative methods which are unable to reveal the deep structures of dagongzhe social identity, which interacts with dynamic and complex social contexts over time. It also fails to reveal the underlying antecedents that are expected to have huge impacts on job-related outcomes.

Knight, Song & Gunatilaka (2008) concluded in their paper, "our analysis suggests that we need to draw on psychology and sociology if we were to understand". This thesis aims to fill the research gap, bridging sociology and organizational behavior by using sociology knowledge and narrative research methods to map Chinese migrant workers

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[9]Wang (2017) asserted that "dagongzhe" is the manifestation of an accurate understanding of migrant workers.

identity construction paths. And to give the insights of how identity components impact job-related outcomes. Thus, the research questions are:

(1) How do migrant workers construct their dagongzhe identity?

(2) How does dagongzhe identity influence job-related outcomes?

Research Methods

Narrative approach

A narrative approach was used to explore how migrant workers construct their dagongzhe identity. From telling a story about the self there emerges a sense of self (Ricoeur, 1988). Storytelling was called the "sense-making currency of organization". It allows for the study of elite narratives that permeate the organization as well as those that are hidden, including the study of marginalized living stories, thus recognizing and giving voice to the voiceless (Rosile, Boje, Carlon, Down, Saylors, 2013). People live and/or understand their lives in story form, connecting events in the manner of a plot that has a beginning, a middle and an end (Sarbin, 1986). For this thesis, a plot structure was adopted with interviewees encouraged to tell their stories in 3 phases: 1) life before dagong, 2) dagong life, and 3) future life plans. The heart of this study is the narrative approach which obtained both retrospective and real-time accounts of migrant workers experiences and the phenomenon of theoretical interest.

Data collection

Like all good qualitative research, multiple data sources were employed, including one hundred and twenty-one interviews, archival documents and personal observations. The interview sample consisted of ninety-one migrant workers' interviews, from a variety of sectors. Thirty interviews were conducted with stakeholders, such as factory management teams, policemen who are directly in contact with the community of migrant workers, the labor bureau who deal with the labor disputes between migrant workers and factories, the civil affairs bureau who helps disadvantaged groups, NGOs which provide psychological support to help the migrant workers families. Using the "triangle perspective" gave us a sensible and comprehensive overview to interpret migrant workers' identity narratives. In attempting to capture a sense of the wide diversity, the sample contained various age groups (to capture the generational

differences of migrant workers), gender, places of origin, occupations, work locations, (ranging from 2nd and 3rd tier cities -Zhongshan, Jiangmen to 1st tier cities - Shenzhen). These three cities are in the Pearl River Delta in Southern China with industries ranging from manufacturing to services. Most interviews were formal and organized, and were digitally recorded, and have been transcribed. Words, repetitions and their behavior (crying, smiling, gestures such as playing with keys, and picking up phones) were recorded with notes. Informal interviews were not recorded but notes made immediately following the interviews. The author of this thesis has an ownership position of a small factory which does the OEM (original equipment manufacturer) business for a Japanese firm. This position in the factory ownership, provided an exclusive opportunity to observe behavior, and gain direct experience dealing some of the workers. Virtual chat rooms and social media were also jointly investigated to understand how migrant workers talk, their interests and response to social media hot spots. Rich archival documents, ranging from the case studies of Foxconn, annual work reports of the Labor Bureau Shenzhen, "Bluebook of Work Relationship" (Shenzhen), the meeting memos of the basic salary discussions, regulation of the migrant worker training center were examined.

Data analysis

A grounded theory approach was adopted to analyze the data, for two reasons. Firstly, this research design is highly appropriate for generating a new theory (Dey, 1999; Edmondson & McManus, 2007; Locke, 2001). Secondly, migrant workers' identity is a subjective self-representation of precisely the type of phenomena for which grounded theory is most suited (Glaser & Strauss, 1967). My data analysis started with writing memos on a list of broad codes, which match the open, exploratory study design (Obodaru, 2017). For the coding section, the strategies of holistic versus categorical approaches and content versus form were employed (Lieblich et al., 1998). In a holistic analysis, the life story, is represented in the narrative, and is considered a whole, with sections of the text interpreted with respect to other parts. A categorical analysis abstracts sections or words belonging to a category, using coding strategies. The dimension of content versus form refers to reading that concentrates on either, what is told, or how it is told. The data was scrutinized, line by line, constantly seeking similarities and differences among the categories, to develop a list of preliminary concepts and sample concepts. This included "ingroup comparison", and, "outgroup

comparison", "proximity", "tentative self" and "filial piety". Moving back and forth between data and literature, the "comparison identity", "relational identity" and "reflexivity identity" three mechanisms of identity construction as the preliminary dimensions emerged. In the theoretical mode, some themes were in Chinese which was done for a critical reason. Many social scientists have noted that in the Chinese language there are some indigenous concepts that are frequently used to define the appropriateness of interpersonal arrangements (Hwang, 1987). Scholars have attempted to expound the meaning and importance of such indigenous concepts as guanxi (Chiao, 1982; Jacobs, 1979), mianzi[10] (Ho, 1974; Hu, 1944; King & Myers 1977). As this research is unique in the Chinese setting, keeping commonly used Chinese wording, such as guanxi, mianzi[11] for themes to suit the Chinese social context was considered to be important for authenticity.

Research Findings

Finding 1: Dagongzhe identity construction model

Dagongzhe identity construction model is shown in a two-order approach developed by Gioia, Corley and Hamilton (2012). First order data includes interviewees' own words and second-order data represents the concepts and relations we extracted from the first-order data. The theoretical model was summarized, defining the novel constructs of migrant workers' identity.

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[10]Mianzi, is literally translated as face and in Confucian culture.

Figure 1 Dagongzhe identity construction model

	First Order Concepts	Second Order Themes

Examples

OUTGROUP COMPARISON: "In my community, no-one buy house here."

INGROUP COMPARISON: "In our hometown, people like comparison. Whose house is bigger, whose car is expensive. I want to build a house in my village. Also, I want my laoxiang seeing my house there."

→ **Reference Group**

PROXIMITY: "My previous boss, I worked in her clothes shop. That female boss has not much education, knowing very little words, but she had clothes chain shops. I really admired her."
"My colleague, he is a manager now. He started from a regular worker, spending 10 years here. He knows everything, and I really admire him."
"My cousin, he ran a glass factory. He went out when he was 16, and started his own business at his 23, in Guangdong. The other cousin is running a factory for making steel. I admire them."
TENTATIVE SELF: "General Manager Liu is my role model. If I am like him, I will go for my own business…honestly. His position is

→ **Role Model**

Comparison Identity

FILIAL PIETY: PARENT-CHILD AXIS: "No matter how big career you have, Xiao (Filial) is the priority. Though I am out for Dagong, I feel hard, tired. But considering to treat my parents, no matter how hard I have to continue."
"Families are the first, then is work. You must feed your families, then you need work, then others. … Jobs is not a single choice. Losing this job, it can be found in other place."
"Where are parents, where is home. Without parents, I definitely have no feeling of home."
FILIAL PIETY: HUSBAND-WIFE AXIS: "my husband wanted to dagong, then I came as well."
"My goal? My goal is to marry a good man, and have kids"
FILIAL PIETY AS SOCIAL NORMS: "My sister's son worked in pinan bank… He rent an apartment in ding tai feng hua (a high-end compound in Shenzhen) with his girlfriend. The month rent is up to 6000. He did not give my sister a penny"

→ **Family**

SOCIAL TIES: "Laoxiang, bring me here"
"I need to take the responsibility of the group of my brothers, and these brothers are from my hometown. They came out from hometown and followed me for work. I need to keep the rice bowl."
"I rent a place outside with Laoxiang."
"When off, go out with Liaoxiang, colleagues, and classmates."
RENQING: "If it is in hometown, I would immediately carry her on my back to the hospital. But here I dare not, and I would not do it. Renqing is different in city and hometown."

→ **Laoxiang**

BLURRED INSIDER-OUTSIDER BOUNARY: "They treat me like families, often invited our families for dinners. After we moved out their apartment, we still visited the landlord regularly…in spring festival, we visited them with gifts"
"I don't really feel I am a wai di ren (outsider). Maybe only when I rent a place to live in do, I sense I am not the local. The landlord is the local…When I am at work, I have no feeling I am a wai di ren, not really with this concept."
IDOSYNCRATIC GROUPINGS OF RELATIONSHIP: "Chu wai kai peng you (when you go out, you need friends). The small scale or the large, conversation causes much of incremental boundary change."
"When I am off, I often go to ski…. I jointed the ski club… We discussed in the Wechat (a social media application in China) what we plan to do on the weekend."
"When I am off, I want to know some people. It is not hard. Even in the square, they are dancing in the square; I can make friends to them. And I am running when off, I make friends too."

→ **Friends**

Relational Identity → **Dagongzhe Identity**

SUPERVISOR-SUBORDINATE RELATIONSHIP: "No good work relationship, I would leave."
"If I leave one job, the reason must be I don't feel happy there. No one wants to be punched bag."
"In the work environment he is the lingdao (supervisor), but in the basketball court we are friends."
COWORKER-COWORKER RELATIONSHIP: "The best thing in work is that I can have some close friends in work. We can talk about everything."
SELF-EXPLORATION IN WORKPLACES:
I feel I am like a snake now, peace and slow…trapping in a big house. I plan on going back home for opening a shop, and my girlfriend will join me too. She will graduate from university this year. I will open a clothes shop."

→ **Workplace**

TEMPORARY AND COMPRIMISED CHOICE: "Dagong never make you chu ren toudi (rise head and shoulders above others)."
"Dagong is helping others to fulfill their dream"
"My brother wants to follow his classmates to sell life insurance…Ren wang gao chu pa (people have a natural motivation of climb up to high)."
"CAREER" IS NOT WORK: "My uncle was the vice director of a factory; he is still a dagongzhe…I don't want to follow his path. I want to operate (own business) little by little, to create something. That is different…like my uncle, that (dagong) is no meaning."

Perception of work

GUANXI PRODUCTION: In this factory, it is no use if you have no one behind to support you. There must be someone supporting you…We need to have our own way."
"I proactively approached to them (two policemen), because I knew they must be very helpful for me. I realized that without someone guiding you, you could not do anything. Without noble people' supports, like me, no education, is very difficult to walk to the end."
"You know if you want to join it, you gonna have guanxi. But I have no guanxi at all. No guanxi, I find guanxi by myself."

Guanxi

Reflexivity Identity

MORAL FACE: "When we finished the beer, I just planned to buy some more beer. The barber said, 'you don'thave money, do you?' Hearing this, I got very frustrated. I immediately bought 36 bottles of beer back to the table."
"I used to work for insurance company. I felt very hurt… I experienced prejudice…"
SOCIAL FACE: "The most impressed thing here is that I attended annual dinner of XHY as worker's representative."
"I feel happy; my name was in the Honor Worker Board."

Mianzi

INNER BELIEF SYSTERM: "Dagong a whole life is impossible."
"Everyone needs to go home. Luo ye gui gen (leaves and fruit were fed up by the root and the land underneath, and the leaves and fruits eventually return to the root and the land mother)."
"I have been working in Shenzhen more than 20 years…I will go back home to open a small restaurant with my wife. My son will stay here, I bought an apartment for him in my hometown, and he does not want to go back."
RISK SEEKERS: "We cannot dagong for the rest of life. We have to give a try (try their own business) …What if we fail? If we fail, losing all the money, we just get back to cities, continue dagong. It is not a big deal."

Life-planning

...rs we...d as:

1) *comparison identity*, constituted by components of the reference group and role models; *relational identity*, constituted by components of families, laoxiang (the same geographical origin), friends, and workplace, and *reflexivity identity*, constituted by components of perception of work, guanxi, mianzi and life-planning.

2) These three identity construction mechanisms occur concurrently within classes of complex structures or process. The course of migrant workers constructing their identity is embedded in continuous complex social processes involving institutional exclusion, economic transit, and Chinese cultural capital. The identity construction model indicates their differentiation and integration strategies in response to multiple demands on and tensions within their social position. It provides brief pictures of migrant workers dealing with families (the left-behind families and families in the urban area), state of party, organizations, plus their rural and urban communities. Specific components of identity construction represent the condition and their identity motives when the construction work occurs. It focuses on the interaction of socialization and identity in organizations over time to develop a coherent theoretical model

showing the dynamics through which migrant workers gain a situated sense of self. This study looks at forces in an identity field and provides a more dynamic view of individuals' search for a "DIY biography".

Differs to in the professional occupations domain where work is such a huge part of their identity, migrant workers have mixed cognitions and feelings towards their dagongzhe identity which I call it "ambivalence" which is reflected in their attitudes: they may accept, disregard, or reject their dagongzhe identity rather than being indifferent or neutral. Up to the time of writing, there is not previously been a specific framework depicting different components as being cohesive, while at the same time contradictory, both working together within identity construction processes. This research presents insights into the complicated picture of identity tension within migrant worker groups, by integrating all components into a cohesive identity tension framework.

Figure 2 The integrated framework of components of dagongzhe identity

Staying in urban areas

Mianzi

Role model

Guanxi

Workplace

Friends

Laoxiang

Families

Dagong

Having their own business

Perception

Life-planning

Reference group

Going home

The integrated framework of dagongzhe' identity components, demonstrates how components of identity act as a cohesive force, while at the same time being a contradictory power. The components of reflexivity identity might be the most interesting part in this identity tension model, as they show the greatest conflict. The dispersed layout reflects migrant workers' paradoxical response to the life and work uncertainties. Comparison identity and reflexivity identity are more variable as the environment changes. Rooted in Chinese Confucian cultural tradition, relational identity is chronic and fundamental as it provides the textual meaning helping migrant workers define themselves. These components are different social forces arrayed in opposing directions to create the "inner instability of identity". Further, migrant workers also seemingly seek stable states which are equilibria held in rough suspension between opposing forces. Looking at the model, considering identity components as the power of identity, it is clear that more power lies down the right-hand side. It means, with so many internal forces fighting and negotiating, staying in the urban areas for dagong (work for a boss) becomes migrant workers most common compromise choice. But we also need to be aware that the components of identity may shift any time, strengthening or weakening the sense of self. It highlights the dynamic nature of identity.

Finding 2: Dagongzhe identity - identity motives- job related outcomes

Previous research focused on externally oriented identity work and how people preserve their images with other people (Kreiner et al., 2006). My work has looked both outwardly and inwardly, uncovering exclusively a "black box of cognition", that individuals work with internally to build their own identity within complex and socially intertwined factors. Building on structuration theory (Giddens, 1984) which recognizes that action and structure are said to both constrain by bounding choice and to enable one another. I argue all these components of identity relate to specific outcomes associated with the individual's job. I speculate that reference groups, role models in comparison identity representing self-verification, as the antecedents, will impact goal setting in the organizational context. Families, laoxiang (geographical origin, e.g. being born in the same village), friends, work relationship in relational identity mechanisms representing belonging and self-enhancement, which are the antecedents, will impact subjective well-being and job commitment. Life planning, mianzi, guanxi and perception of work in reflexivity identity representing subjective uncertainty and self-presentation, which are the antecedents, will impact in subjective well-being and job insecurity.

My study offers a dynamic perspective by providing a full understanding of the complex nature and implication of identity construction in the workplace. My finding reveals the notion that low status, less powerful members "seek validation from those acting on behalf of the organization than on their own accord" (Brickson, 2015). They accept that power is distributed unequally, and they are more likely to take organizational sensebreaking and sensegiving at face value. I witnessed migrant workers putting much stock in social validation from their supervisors and managers.

Table 1 Dagongzhe identity and identity motives

Mechanism of identity construction	Components of identity	Identity motives[12]	Job-related outcomes
Comparison identity	Reference group, role model	Self-verification, prototype	Goad setting
Relational identity	Families, laoxiang, friends, work relationship	Belonging, self-enhancement	Well-being Job commitment
Reflexivity identity	Life planning, mianzi and guanxi	Reduction of subjective uncertainty and self-presentation	Well-being Job insecurity

Implication

The findings in this thesis allow the academia, the businesses and the Government to understand how migrant workers see, or hope to see themselves, and how they act and shape those identities. A job title, a team goal, a department's function, and an organization's mission may be easily stated, but what those labels really mean to the individual, the identities they convey are not easily stated (Ashforth & Schinoff, 2016). In terms of theoretical implication, as researchers know so little about dagongzhe and their identity, one of uniqueness of this thesis is that I develop a coherent theoretical model of process of dagongzhe identity construction. It is the first attempt to reveal the dynamics through which migrant workers construct a situated sense of self in the organizational setting. Based on multi-source and multi-level qualitative

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[12] The analysis based on the work from Ashforth & Schinoff (2016).

data, I developed grounded theory and a process model showing how dagongzhe enact and shape their identity over time both in the present and for the future. Deeply intertwined with narratives, this study explores how dagongzhe negotiate the different components of identity which have different identity underlying motives and how they come to be reasonably affirmed. It broadens the scope of current inquiries into how individuals construct identities that resonate with their cultural context (Ashforth & Schinoff, 2016). I interpreted which elements of dagongzhe identity and influence what types of job-related outcomes. With the first attempt of providing the hidden antecedent identity motives and elements of identity. It serves a great deal for the future studies on identity in psychology, sociology and organizational behavior.

In terms of practical implication, my findings tackle the theoretically and practically important puzzles for researchers and organizations about why low job commitment, low job motivation and high turnover rate prevail among migrant workers. Due to strong relational identity, migrant workers have situated identification but have difficulties in forming deep structural identification in workplaces. Seeking mianzi, guanxi production in self-reflexivity give significant impacts on subjective well-being and job insecurity which is reflected in their attempts to achieve their ideal self, ie. having their own business.

This thesis is unique to the Government. My findings urge the state to consider granting migrant workers a more comprehensive, inclusive and generous policy on hukou regime, social welfare, education regime and other residential amenities. Only if the Government does this will dagongzhe complete their individualization process of disembedding re-embedding (Yan, 2009). Migrant workers either accept, disregard, or reject their dagongzhe identity. Ambivalence is the reflection of their own espoused values, norms, ideologies and actual practices which misalign with the desire of the Government. This finding gives an opportunity for the Government to consider. If they change their narrative on migrant workers while the public discourse stigmatizes migrant workers and views migrant workers as "others" that can only lead to reinforcing negative stereotypes. The propaganda sources in China are urged to stop jeopardizing migrant workers but should try to help them to make their dagongzhe identity being affirmed and verified.

Conclusions

In this thesis, I employed narrative approaches to map the psychological pictures of the disadvantaged group of Chinese migrant workers, deducing their trajectory of identity construction and outlining them as three mechanisms: comparison identity, relational identity

and reflexivity identity. Each identity construction mechanism has its specific items: comparison identity consists of reference group and role model; relational identity consists of families, laoxiang, and workplace; reflective identity consists of perception of work, mianzi, guanxi and life-planning. The dagongzhe identity construction model reveals Chinese cultural capital, such as "filial piety" and "differential order", play vital roles in shaping their social identity. Their reference point and reference group are those in proximity to them. They are exploring their subjective self-awareness through the social interaction, defending their moral face and earning their social face. To feel confident in urban life, they discover and catch the opportunities through "self-exploring", "guanxi exploration", "guanxi production". This thesis broadens the scope of current academic inquiries into how individuals construct identities that resonate with their cultural context, how individuals make choices when occupation identity is misaligned with a desired self (Ashforth & Schinoff, 2016). This thesis is the first attempt to reveal the identity tension in which to understand dagongzhe struggles in response to multiple demands and life goals within their inferior social position. It offers readers a dynamic view of dagongzhe search for a "DIY biography" in a process full of conflicts, ambiguities and paradoxes.

This study interprets how identity mechanisms influence the job-related outcomes in the workplace. I argued comparison identity representing self-verification, serves as the antecedent of goal setting; relational identity representing belonging and self-enhancement, influences subjective well-being and commitment; reflectivity identity representing subjective uncertainty and self-presentation serves as the antecedent of well-being and job insecurity. The research presented filled the gap in current literature with no clear views on antecedents of job-related outcomes. For businesses and researchers, my findings clearly demonstrate the reasons that urban migrant workers have low job commitment, low motivation and high turnover rates. This research shed the light in low skill workers management, particularly for emerging market.