THÈSE présentée par :

Laurent ANTONCZAK

soutenue le : **8 mars 2022**

pour obtenir le grade de : **Docteur de l'université de Strasbourg**

Discipline/ Spécialité : **Sciences de Gestion**

CREATIVITY ON THE MOVE

How Can Mobile Technology Enable Collaborative and Innovative Practices?

THÈSE dirigée par :
LLERENA Patrick   Professeur, université de Strasbourg

RAPPORTEURS :
IMAMURA Hajime   Professeur, université de Toyo
TANG Mingfeng   Professeure, université des Finances et de l'Économie
                                             du Sud-Ouest de Chine

AUTRES MEMBRES DU JURY :
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UNIVERSITÉ DE STRASBOURG

ÉCOLE DOCTORALE 221 - Augustin Cournot

Bureau d'Économie Théorique et Appliquée – BETA UMR 7522

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Acknowledgements

Ehara taku toa, he takitahi, he toa takitini. –Māori proverb
(My success should not be bestowed onto me alone, as it was not individual success but the success of a collective)

CONTENTS

List of Tables

List of Figures

List of Appendices

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined below and in *Annexe 14*), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

References	Writting	Empirical data	Research design	Literature review	Methodology	Discussion	Conclusion	
Antonczak, L. & Burger-Helmchen, T. [under revision]. Creativity on the move: nexus of technology, slack and social complexities. *Revue d'Économie Industrielle (REI)*.	X	X	X	X	X	X	X	[m-SLACK]
Antonczak, L. (2021). Mobile Technology: innovative and creative practices enabling learning environments in Higher Education & Business. *The 4th Scholarship of Technology Enhanced Learning (SoTEL) Symposium*, February 18-19, Auckland.	X	X	X	X	X	X	X	[m-COLLABORATION]
Antonczak, L. & Burger-Helmchen, T. (2021) [in press]. Being mobile: a call for collaborative innovation practices?. *Information and Learning Sciences (ILS)*.	X	X	X	X	X	X	X	[m-COLLABORATION]
Antonczak, L. (2020). Mobile technology: a new ba of work organisation?. *Innovations - Journal of Innovation Economics & Management*, 31(1), 11-37.	X	X	X	X	X	X	X	[BA MOBILE]
Antonczak, L. (2019). Scaling-up collaborative practices through mobile technology. *The 25th International Conference on Engineering/International Technology Management Conference (ICE/ITMC)*, June 17-19, Nice.	X	X	X	X	X	X	X	[BA MOBILE]

Table 1 Estimated personal contribution to research articles (blue = primary; grey = secondary) – Appendix 1.

[Full-scale version: please scan the QR code with your mobile device, or check http://bit.ly/3rXCHbT]

List of Abbreviations/Glossary

ANT	Actor-Network Theory
ATAWAD	Any Time Any Where Any Device
BETA	Bureau d'Économie Théorique et Appliquée
CI	Collective Innovation
CIs	Creative Industries
CMC	Computer-Mediated Communication
CoI	Communities of Inquiry/Interest
COIN	COllaborative Innovation Network
CoP	Communities of Practice
F2F	Face-to-face
FR	France
GPS	Global Positioning System
HR	Human Resources
ICT	Information and Communication Technology
INT	International
IPS	Information Processing System
IS	Information System
IT	Information Technology
JP	Japan
KI	Knowledge Intensive
KL	Knowledge Loss
KM	Knowledge Management
KR	Knowledge Retention
KS	Knowledge Sharing
KT	Knowledge Transfer
LS	Learning Sciences
NESTA	National Endowment for Science, Technology and the Arts
NZ	Aotearoa New Zealand
OI	Open Innovation
OL	Organisational Learning
R&D	Research and Development
SECI	Socialisation; Externalisation; Combination; and Internalisation
SME	Small and Medium-sized Enterprise
VCoP	Virtual Community of Practice
WEF	World Economic Forum

CHAPTER 1 – Overview

'Innovation comes from people meeting up in the hallways or calling each other at 10:30 at night with a new idea, or because they realized something that shoots holes in how we've been thinking about a problem. It's ad hoc meetings of six people called by someone who thinks he has figured out the coolest new thing ever and who wants to know what other people think of his idea.' –Steven Paul "Steve" Job, Apple & The Walt Disney Company, interview with *Business Week*, 2004.

1.1 Rationale

The beginning of the 21ˢᵗ century is characterised by the increase of cultural interaction in relation to a widespread digital environment, by an exponential acceleration of the 80's movement in terms of production and more specifically the rapidly evolving/merging Creative Economy & Network Economy. Carlos Moelas (Commissioner for Research, Science and Innovation, European Commission) summarised this perspective:

'Put simply, the advent of digital technologies is making science and innovation more open, collaborative, and global' (Directorate-General for Research and Innovation – European Commission, 2016, p. 6)

And, Moelas further added that:

'Fostering international cooperation in research and innovation is a strategic priority for the European Union so that we can access the latest knowledge and the best talent worldwide, tackle global societal challenges more effectively, create business opportunities in new and emerging markets, and use science diplomacy as an influential instrument of external policy' (Directorate-General for Research and Innovation – European Commission, 2016, p. 59)

With regard to technology and although growing, there is a modicum of literature focussing on creativity, knowledge creation, and organisational management, especially in terms of mobile technology. In the last 150 years, the simple telephone has evolved into the smartphone; from a basic device to communicate orally, to a complex device comparable to a Swiss Army knife for any type of communication (Figure 1.1).
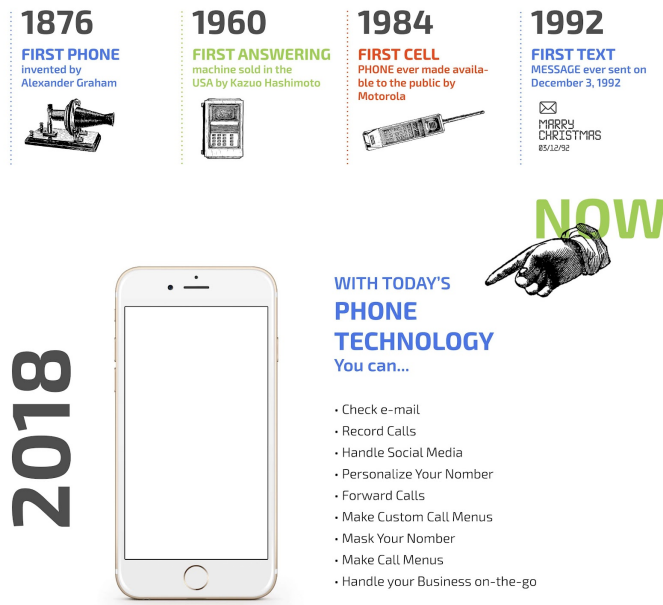
Figure 1.1 Key dates and highlights in relation to mobile technology (see also Appendix 2*).*
Source: https://www.mightycall.com/blog/innovation-of-phone-technology/

Furthermore, in a comparison with the growth rate of computers and laptops as a means to access the Internet in the last five years, mobile technologies have nearly doubled. We argue that this has encouraged SMEs to develop websites to be 'mobile first', as defined by Eric Schmidt, CEO of Google, during the Mobile World Congress in 2010.
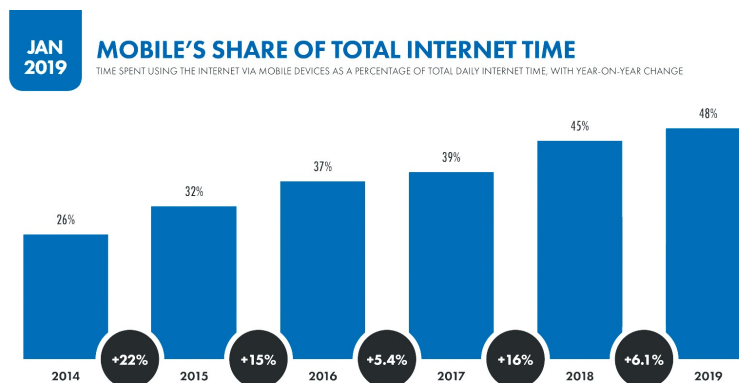
Figure 1.2 Source: extrapolated from GlobalWebIndex data; Kepios analysis. based on the findings of a broad survey of internet users aged 16-64, Hootsuite[1], https://bit.ly/3iqnqLd

Up to by the launch of the 5G network in Europe (European Digital SME Alliance, 2020), the trend towards mobility in computing has been growing slowly. So, it is further argued that the use of mobile devices has become unavoidable and that smartphones and their related products (tablets, phablets, and wearables) provide multiple uses that include personal and work applications.

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[1] *Hootsuite*, created in 2008 in Canada, is a global leader in social media management, and produces regularly reports that are "a trusted resource for policymakers, journalists, businesses, and NGOs over the last ten years" (retrieved from https://www.hootsuite.com/resources/digital-2020).

A day in the life of a smartphone
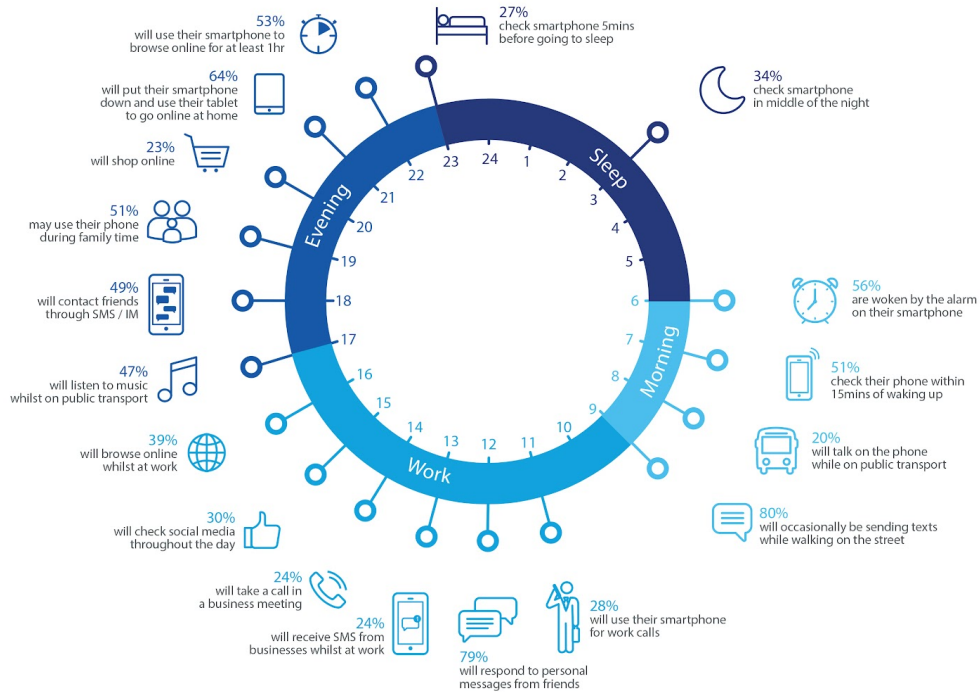
Figure 1.3 Source: Textlocal[2] Consumer Behaviour Research 2018, https://bit.ly/3neTogY

This research addresses the growth and impact of mobile technologies, knowledge conception, creative teams production and associated organisation, with a particular focus on SMEs. Despite that they represent the majority of businesses in the creative sector, SMEs are often overlooked.

1.2 Research Objectives

The research focuses on ways to enable open and democratic (Chesbrough et al., 2014; von Hippel, 2013) and collective (Demil et al., 2010; Suire et al., 2018) innovation. The research involves users and the community of interests/practices (Nelson & Winter, 1982; Amin & Cohendet, 2004) via pervasive media; mobile phones in this instance (Ahonen, 2011; Jenkins et al., 2013). Since SME access to resources is restricted or defined, then to drive growth, open innovation[3] and collaborative strategies are presented (Orlikowski, 2002, Chesbrough et al., 2014).

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[2] Textlocal is a multi-awarded UK-based mobile communications provider and provides high quality market analysis.
[3] 'Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. [This paradigm] assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology' (Chesbrough, 2006)

1.2.1 Overarching Research Question

Knowledge-intensive working environments are becoming increasingly unpredictable and involve constant interactions between eclectic people, groups, teams, communities, organisations and firms. In order to support complex systems to "have very specific properties, in particular, the non-linearity of responses to stimuli" (Héraud & Burger-Helmchen, 2019, p. 1), increases in processes of digital transformation are required. Hence, our key research questions state:

How can mobile technology (smartphones, phablets or tablets) enable (co)creative practices across a wide range of collaborators and spatiotemporal environments?

How can mobile technology enable innovative and collective practices in SMEs?

1.2.2 Aims

> *'The management of a complex organisation must accept the idea that the system cannot be completely controlled, but only steered'* (Héraud & Burger-Helmchen, 2019, p. 2)

The findings of this research are located at the intersection of Academia, by analysing and synthesising theories and their currency; applied research and development, by taking into consideration SME imperatives and market constraints such as globalisation, competitiveness and efficiency; and society, by highlighting a potential paradigm shift in peoples' behaviour and thinking due to the digital advent of mobile technology. Also, because 'a complex system operates largely autonomously and occasionally produces unexpected properties, which is a form of creativity' (Héraud & Burger-Helmchen, 2019, p. 2), this research project aims to better understand and define some features and conditions of innovation theory and practices in relation to new technologies, more specifically mobile technologies. Subsequently to clearly ascertain the characteristics of mobile technologies as a potential actor, a new model for transforming ideas into action for managing organisational creativity. Furthermore, this thesis looks at the co-creative process in relation to international challenges for SMEs and provides some avenues for enabling innovation through applications of mobile technology.

1.2.3 Specific Objectives

Schoemaker & Day (2009) defined a weak signal as such:

> *A seemingly random or disconnected piece of information that at first appears to be background noise but can be recognised as part of a significant pattern by viewing it through a different frame or connecting it with other pieces of information.* (p. 86)

Thus, this research explores and defines some of the mobile potentials to enhance *Hono[4] Economicus* by revealing weak signals embedded within current mobile professional use and affordances within the sphere of the Creative Industries (CIs). Klaus Schwab (Founder and Executive Chairman, WEF, 2016) says that "we are entering the age of the Fourth Industrial Revolution, a technological transformation driven by a ubiquitous and mobile internet" which "is creating a greater demand for technology and for people to work together effectively". In terms of society, rapidly evolving market trends and the environment, and disruptive and unpredictable competition between nations and cultures create greater complexity that requires the making of constant macro and micro-decisions and interactions between citizens and businesses, consequently making the future of society uncertain. To meet this, organisations need to make business operations and activities faster and more efficient. Thus to avoid being left behind by the competition, organisations need to adopt and enable technological advancement quickly. For SMEs, the precarious situation means taking risks relative to their capital and resource management. People in SMEs are required to provide critical thinking and deliver business decisions, so these pressures affect recruitment, providing an enriching workspace with a thriving culture of collaboration, and engaging with an international multi-stakeholder community. Examples include the "advanced manufacturing, autonomous mobility and smart cities require true partnership models based on our shared values and must move at internet speed", and "a well-implemented AI strategy will allow organizations to empower their employees to be creative and focus on solving problems, improve and personalize customer experiences, and enable contribution to society" (WEF, 2016). These considerations reinforce the focus on mobile technology in relation to processes and practices, and knowledge creation, in order to enhance SMEs' productivity, and societal growth in this research.

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[4] Māori word: http://goo.gl/1jlfuo

1.3 Contextualisation

In this section is presented a *Systematic Literature Review* (SLR) that addresses the research topic on the growth and adoption of mobile technologies, the role of SMEs, the practice of knowledge creation, and its impacts on society.

1.3.1 Knowledge Management, Creativity and Mobile Technology: A Systematic Review

The purpose of the SLR is to critically analyse existing literature by applying a content analysis approach and identify theories, empirical methods, and distinct themes and topics encompassing the topic. To contextualise our research, *Business Source Premier* (BSP) is sourced because of its international field of expertise (economy and business-related research) and accepted reputation. The results are then discussed (Saad & Agogué, 2020; referring to Harari et al., 2020).

1.3.1.1 Search Tactics and Criteria

To start with, the subject of the research does not concern mobile technology per se, which belongs to the field of Engineering, Computer Sciences, but addresses the capacity to create or innovate by freeing oneself from the company's regional and national boundaries, and from the notion of time zones. Thus, the primary context is the management and production of knowledge, which motivates the search for *#knowledge management* (234,363 entries). Then, as the research interest lies in creating with several people, by emancipating oneself from spatial constraints, the keywords such as *collaboration* or *teamwork* are chosen. BSP offered the following keywords, *#collaboration or teamwork or group work or interdisciplinary or communication* (178,031 entries).

From personal professional experience in education, we encountered scholars such as Sharples (2000), who included laptops within their definition of mobile devices. However, such a definition was established at a time when smartphones were only mobile phones, only then emerging and with limited use, plus operating via a 2G network with its limited technical capability. However, smartphones post-2010 (using the 4G network) are represented as, permanently carried tools that are always connected and provide interaction with other individuals ('first personal mass medium') (Ahonen, 2011). Therefore, the focus is specifically on *#mobile technology* (18,672 entries).

Finally, our field of research pertains to CIs, so creativity or any notion related to it, such as *#creativity or innovation or creative thinking* (BSP suggestion produced 12,000 results) are relevant. Then the following filters were applied: 'Academic journals (refereed)', 'University journals', and 'Full text' in 'English' only and ranging from 1990 to 2021, therefore covering a period of a little more than thirty years. We reached a total of 11,953 entries and focussed only on HCERES journals (qualitative choice), which eliminated ~8,000 publications and brought down the findings to 4,270 entries (Table 1.1).

Table 1.1 Breakdown of the HCERES approved publications.

Journal name	Number of Publications
mis quarterly	246
regional studies	211
journal of management information systems	201
international journal of production research	199
journal of product innovation management	178
journal of marketing management	162
information systems journal	147
california management review	138
journal of the association for information systems	135
international journal of human resource management	133
organization science	112
r&d management	112
journal of the academy of marketing science	111
academy of management journal	101
journal of marketing	96
international journal of electronic commerce	94
urban studies	82
journal of economic literature	75
academy of management review	74
journal of strategic marketing	68
management science	67
total quality management & business excellence	67
information systems research	66
transport reviews	56
administrative science quarterly	53
asia pacific business review	52
decision sciences	49
international journal of management reviews	46
international journal of advertising	44
journal of international marketing	43
british journal of management	42
journal of marketing research	41
journal of advertising	39
academy of management perspectives	38
journal of evolutionary economics	38
papers in regional science	37
business history	36
public administration review	36

third world quarterly	36
public management review	35
journal of small business management	34
applied economics	33
annals of regional science	31
marketing science	30
journal of consumer research	29
journal of development studies	29
journal of regional science	29
journal of economic surveys	27
world economy	27
journal of business logistics	26
m@n@gement	25
oxford development studies	25
journal of economic perspectives	24
american economic review	23
american journal of agricultural economics	19
journal of change management	19
brookings papers on economic activity	18
british journal of industrial relations	17
economic history review	16
economic journal	16
international journal of the economics of business	16
journal of brand management	16
journal of economic issues	16
journal of enterprising culture	16
african development review	15
housing studies	15
journal of common market studies	15
journal of consumer affairs	15
business ethics: a european review	14
journal of labor research	14
journal of media economics	14
journal of political economy	14
sloan management review	14
canadian journal of economics	13
european journal of development research	13

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A second filtering process excluded topics irrelevant to the research. Table 1.2 details endorsed and excluded topics: CIs, SMEs, France, Aotearoa New Zealand, and Japan (OECD countries):

Table 1.2 First screening by SUBJECT

Topics	Number of citation
––

social media	96
developing countries	59
social aspects	58
literature reviews	55
psychology	54

digital technology	50
online social networks	39
virtual communities	39
united states	38
case studies	37
motivation (psycho.)	33
social capital	33
internet users	32
knowledge transfer	31
performance	31
information technology research	30
social informatics	30
creative ability	29
social influence	29
social interaction	29
trust	28
mobile apps	25
competition	24
virtual reality	24
disruptive technologies	23
learning	23
theory of knowledge	22
word-of-mouth communication	22
cross-cultural differences	20
knowledge management research	20
uncertainty	20
digitization	18
organizational behavior research	18
theory	17
technology & society	16
attitude (psychology)	15
emotions	15
group identity	15
human behavior	15
new product development management	15
cognition	14
digital divide	14
education	14
social network theory	14
adaptability (psychology)	13
organizational ecology	13
social sciences	13
web 2.0	13
behavior	12
collective action	12
developed countries	12
ethnology	12
experience	12
information technology & society	12
multiagent systems	12
perception	12
psychological aspects	12

social groups	12
social network research	12
ambidexterity	11
———————————	

EXCLUSION OF:

structural equation modeling, research methodology, methodology, cities & towns, consumer behavior research, consumer behavior research, internet of things, sustainability, computer network resources, technology acceptance model, cloud computing, meta-analysis, history, longitudinal method, heterogeneity, internet in public administration, policy sciences, surveys, rural development, books, Twitter (web resource), comparative studies, institutional theory (sociology), political science, internal migration, area studies, urbanization, identity (psychology), machine learning, privacy, acquisition of data, agriculture, consumer attitude research, content analysis, electronic commerce research, sociocultural factors, end-users (information technology), theory-practice relationship, web design, conceptual models.

——

After filtering, a new total of 1,133 entries was obtained. Filtering again excluded references from research domains not relevant to this research (Table 1.3).

Table 1.3 – Second screening by SUBJECT

Topics	Number of citation
technology acceptance model	12
digital media	9
technological innovations & society	9
social psychology	8
engagement (philosophy)	7
influence	7
social media research	7
sociocultural factors	7
contagion (social psychology)	6
frames (social sciences)	6
intrinsic motivation	6
agent (philosophy)	5
economic globalization	5
planned behavior theory	5
social integration	5
social perception	5
twenty-first century	5
choice (psychology)	4
complexity (philosophy)	4
contextual analysis	4
cross-cultural studies	4
curiosity	4
experiential learning	4
exploitation of humans	4
extrinsic motivation	4
geography	4
information technology & economics	4
integration (theory of knowledge)	4
online social networks research	4
performative (philosophy)	4
psychological adaptation	4
psychological stress	4
reputation (sociology)	4

resistance to change	4
satisfaction	4
self-determination theory	4
self-perception	4
sensemaking theory (communication)	4
social processes	4
socialization	4
sociology of technology	4
success	4
theory of reasoned action	4
ability	3
adoption of ideas	3
affect (psychology)	3

EXCLUSION OF:

structural equation modeling, research methodology, computer network resources, institutional theory (sociology), Twitter (web resource), consumer behavior research, Facebook (web resource), sustainability, methodology, identity (psychology), policy sciences, surveys, blogs, critical realism, end-users (information technology), longitudinal method, pluralism, web design, acquisition of data, comparative studies, consumption (economics) & psychology, electronic commerce research, heterogeneity, homophily theory (communication), least squares, Likert scale, machine learning, meta-analysis, ontology, privacy, utilitarianism, avatars (virtual reality), cities & towns, cloud computing, computer science research, computer simulation, conceptual models, content analysis, customer satisfaction research, ethics, expatriation, experimental design, higher education, history, internet in public administration, internet marketing research, panel analysis, scholarly publishing, social history, social psychology research, technology & state, user-centred system design, action research, agglomeration (materials)

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The last filtering process provided 108 entries, with some of the articles appearing in multiple topics (listed above). Figure 1.4 illustrates the final set of publications as the number published per year.
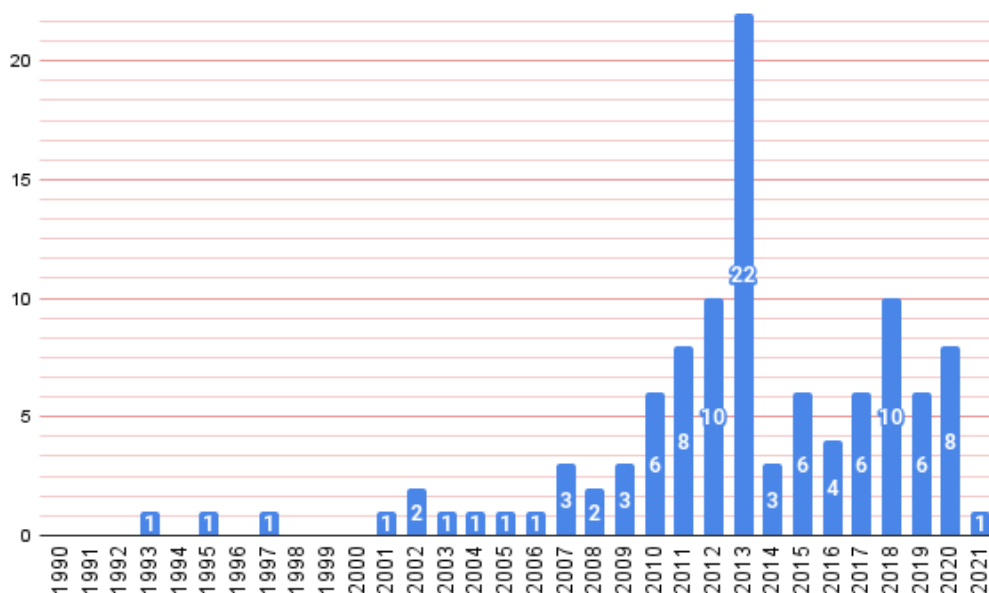
Figure 1.4 Visualisation of the number of publications per year that resulted from the selection process.

In the next step, the remaining publications were sorted and organised according to their focus, identified in the abstract. Also, although our research goes as far as taking into account publications from 1990, and knowing that the first smartphone was put on the market in 2007 (the original iPhone), we have given less

importance to publications prior to 2013. This is the date that smartphones used 4G, for example, the iPhone 4 (5th generation - Apple). Of the 108 articles, 13 were relevant only for methodological purposes, leaving a total of 97 contributing publications.

Finally, as defined in Section *1.2 Research Objectives*, our focal point is to explore how a pervasive medium such as mobile phones can enable open, democratic (Chesbrough et al., 2014; von Hippel, 2013) and collective (Demil et al., 2010; Suire et al., 2018) innovation practices between SME staff or within communities of interest and practice (Nelson & Winter, 1982; Amin & Cohendet, 2004). Less emphasis was placed on themes described by the authors and included: 'advertising', 'branding', 'marketing', 'customer relationship management (CRM)', 'e-commerce', 'user behaviour', 'consumer & customer', 'technical (tools/software focus)', 'cloud computing', 'gender', 'religion', 'expatriation', 'trading', 'transport', 'human resources', 'logistics', 'sport', 'gaming' and 'travel'.

The field of interest is clearly defined (see Section *1.2.3 Specific Objectives*), identifying CIs satisfying the choices exclude themes. Some papers included themes like 'advertising' and 'branding' and do belong to CIs, but the specific papers were either technical or methodological.

Around 50% of the articles are deemed to be relevant, with 43 articles identified for inclusion (see *Appendix 3*). Recurring patterns of themes were identified, such as the relationship between 'private' and 'professional' (publications: 02, 29, 65), the notion of 'trust' or even 'serendipity' (publications: **38**, 73, 91), 'affordances' (publications: 03, 17, 49, 78, 89), and the 'sociomateriality' (11, **47**, 83), the organisational 'structuration' (01, 04, 13, 41, **70**, 94, 99), the 'network' theories and associated concepts (15, 34, 46, **80**, 88, 96, 100), and the 'productivity' and alike topics (**05**, 08, 67, 98), creativity (18, **33**), knowledge management (71, **104**), or else co-creation and 'innovation' (37, 40, 87, **106**), and 'community' or 'interest-based' practices (CoP, CoI) (16, 68, **84**).

While these themes assist in learning how mobile technology can enable creativity on the move, 9 significant articles (previously highlighted in bold) are noted and are used as the foundation for further investigation. From each of the nine, relevant cited references that support the contextualisation of our theoretical and empirical framework were collected (see *Figure 1.5*).
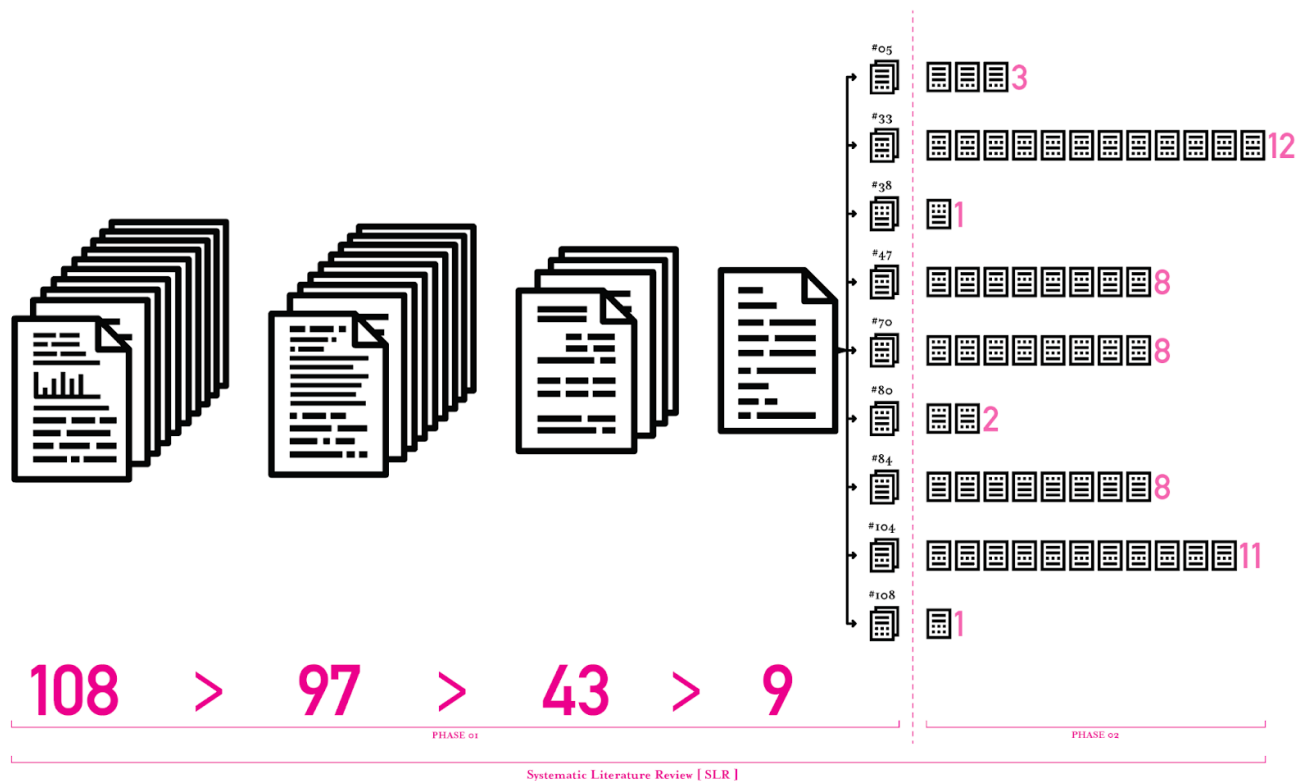
Figure 1.5 Visualisation of the SLR iterative process, and associated bibliographical findings.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/2W7hyRZ]

Table 1.4 (below) presents the shortlist of the selected publications used in the thesis, with comments about their relevance in Figure 1.5 in Section *1.3.2 Mapping The Terrain.*

Table 1.4 Synthesis of the themes, and associated topics

[#]	[Author(s), Publication Date, Title and Aperçu]	[Associated #]	[THEMES]	[Bibliographical and Associated References]	[Figure 1.1 #]
05	**Alvarez, S. A., Zander, U., Barney, J. B., & Afuah, A. (2020) Developing a Theory of the Firm for the 21st Century** The field of management has learned much from theories of the firm developed in the field of economics. However, given trends in the 21st century, it may be time for economically oriented theories of the firm to learn from the field of management. This suggests an interesting possibility: the need to develop a managerial theory of the firm, as opposed to an economic theory of the firm, for the 21st century.	08. 67. 98	**PRODUCTIVITY** 'efficiency', 'slack', 'absorptive capacity'	Nelson, R. & Winter, S. (1982) Penrose, E. (1959) Winter, S. G. (2003) Winter, S. G. (1984)	202 222 288 289
33	**Dechamp, G., & Szostak, B. (2016) Organisational creativity and the creative territory: The nature of influence and strategic challenges for organisations** The discussion takes a look at organisations' openness to their environment and the role of the individual and intellectual property in this openness.	18	**CREATIVITY** 'openess', 'individuals', 'environment'	Amabile, T. M. (1988) Chesbrough, H. W. (2003) Cohendet, P., Llerena P. & Simon L. (2010) Cohendet, P., & Simon, L. (2008) Ford, C. M. (1996) Le Masson, P., Hatchuel, A., & Weil, B. (2014) Leonard, D., & Swap, W. (2005) Suire, R., Berthinier-Poncet, A., & Fabbri, J. (2018) Teece, D. J. (2018) Weick, K. E. (1995) Woodman, R. W. Sawyer, J. E., & Griffin, R. W. (1993) Parmentier, G., Szostak, B. L., & Rüling, C. C. (2017)	9 57 75 77 122 170 171 260 267 283 291 -
38	**Carter, M. (2015) Me, My Self, and I(T): Conceptualizing Information Technology Identity and Its Implications** First, it delineates current understanding of IT as a medium, determinant, or consequent of identity. Second, it defines the conceptual domain and theme of IT identity, which is necessary for investigating the construct's theoretical influence.	73. 91	**TRUST** 'serendipity', 'identity', 'relationship'	Carter, M. (2015) D'Mello, M., & Sahay, S. (2007)	49 -
47	**Faulkner, P., & Runde, J. (2013) Technological Objects, Social Positions, and the Transformational Model of Social Activity** Our aim in this paper is to fill this gap, paying particular attention to the important category of nonmaterial technological objects that lie at the heart of modern information systems.	11. 83	**SOCIOMATERIALITY** 'materiality', 'social media', 'enactment'	Cecez-Kecmanovic, D., Galliers, R. D., Henfridsson, O., Newell, S., & Vidgen, R. (2014) Dierickx, I., & Cool, K. (1989) Faulkner, P., & Runde, J. (2019) Leonardi, P. M. (2014) Leonardi, P. M., Huysman, M., & Steinfield, C. (2013) Nonaka, I., & Takeuchi, H. (1995) Orlikowski, W. J. (2002) Volkoff, O., & Strong, D. M. (2013)	54 93 116 173 175 208 217 279
70	**Roberts, N., Galluch, P. S., Dinger, M., & Grover, V. (2012) Absorptive Capacity and Information Systems Research: Review, Synthesis, and Directions for Future Research** We provide a framework through which IS researchers can more fully leverage the rich aspects of absorptive capacity when investigating the role of information technology in organizations.	01. 04. 11. 41. 94. 99	**STRUCTURATION** 'knowledge creation', 'learning', 'dynamics'	Cohen, W. M., & Levinthal, D. A. (1990) Leonardi, P.M., & Barley, S. R. (2008) March, J. G. (1991) Nonaka, I., & Konno, N. (1998) Nonaka, I., & Takeuchi, H. (1995) Roberts, N., Galluch, P. S., Dinger, M., & Grover, V. (2012) Van de Ven, A. H. (1999) Winter, S. G. (2003)	71 174 188 206 208 232 277 288

30

[#]	[Author(s), Publication Date, Title and Aperçu]	[Associated #]	[THEMES]	[Bibliographical and Associated References]	[Figure 1.1 #]
80	**Aral, S. (2011)** Identifying Social Influence: A Comment on Opinion Leadership and Social Contagion in New Product Diffusion I suggest five broad directions for future research on social influence and opinion leadership that could, if appropriately addressed, dramatically improve how we conceptualize and manage social contagions in a variety of domains.	15, 34, 46, 88, 96, 100	**NETWORK** 'information diffusion', 'dissemination'	Aral, S., Brynjolfsson, E. & Van Alstyne, M. W. (2007) Rogers, E. M. (1983)	18 234
84	**Faraj, S., Jarvenpaa, S. L., & Majchrzak, A. (2011)** Knowledge Collaboration in Online Communities It states that the knowledge collaboration in OCs involves individual acts which include the offering, recombining, and integrating of knowledge to others. Moreover, knowledge collaboration is a critical element for the sustainability of OCs.	16, 68	**COP/COI** 'collaboration', 'teamwork', 'online'	Hippel, E. von (2013) Kane, G. C., Bijan, A., Majchrzak, A., & Faraj, S. (2011) Lave, J., & Wenger, E. (1991) Leonardi, P.M., & Barley, S. R. (2008) Majchrzak, A., Faraj, S., Kane, G. C., & Azad, B. (2013) Majchrzak, A., More, P. H., & Faraj, S. (2012) O'Reilly III, C. A., & Tushman, M. L. (2011) Woodman, R. W., Sawyer, J. E., & Griffin, R. W. (1993)	143 156 169 174 184 185 215 291
104	**Carlile, P. R. (2002)** A Pragmatic View of Knowledge and Boundaries: Boundary Objects in New Product Development A pragmatic view of "knowledge in practice" is developed, describing knowledge as localized, embedded, and invested within a function and how, when working across functions, consequences often arise that generate problematic knowledge boundaries.	71	**KNOWLEDGE MANAGEMENT** 'organisation', 'contextuality', 'meaning'	Brown, J. S., & Duguid, P. (1991) Christensen, C. M., & Carlile, P. R. (2009) Hippel, E. von (2013) Krogh, G. von, Ichijo, K., & Nonaka, I. (2000) Lave, J., & Wenger, E. (1991) Nonaka, I. (2008) Nonaka, I., & Takeuchi, H. (1995) Peirce, C. S. (1903 [1998]) Smith, W. K., & Tushman, M. L. (2005) Teece, D. J. (2018) Wenger, E. (1998)	37 62 143 165 169 205 208 221 257 267 285
106	**Swanson, E. B., & Ramiller, N. C. (1997)** The Organizing Vision in Information Systems Innovation We suggest that institutional processes are engaged from the beginning. Specifically, a diverse interorganizational community creates and employs an organizing vision of an IS innovation that is central to its early, as well as later, diffusion.	37, 40, 87	**INNOVATION** 'cocreation', 'system', 'technology'	Swanson, E. B. (2019)	262

Paul & Criado (2020, p3) state that "keywords can be [...] found in the full text of the article, apart from in its title or abstract" but after discussion with experts, the realisation emerged that the selection of keywords was too narrow. Instead of searching for 'mobile technology', search for 'mobile technology OR mobile devices OR cell phones OR tablets' will have yielded different results. However, rather than restarting the SLR process with different keywords and taking into account the constantly evolving nature of mobile technology and the complexity of its practices, the decision was made to pursue *Phase 02* of the SLR (see Figure 1.5) and to investigate supplementary or complementary bibliographical references in a less systematic way. In relation to the emerging and complex nature of the subject, this widening approach encompasses other fields such as Economy, Sociology, or Design and provided more specifically targeted insights (see *Figure 1.6* on page 43).

Further consultations with experts in Management, Innovation and Creativity suggested that key dimensions involved in online creative teamwork are based on 'virtual teams or virtual collaboration' with 'creativity or innovation' as keywords, producing 'team specific attributes, leadership support, trust and interpersonal connections, knowledge sharing, and technology adaptation and ease of use' (Saad & Agogué, 2020, p. 24). Malins and Watt (2007) differentiate between "tools that are used to accomplish specific project-related tasks and those that are designed to facilitate communication' (p. 30), they provide no references, nor precise indication, about their understanding, or definition, of 'technology', of those 'tools'. Alternatively, Jarvenpaa & Välikangas (2020) apply the keywords 'advanced technology' and 'collaborative creativity' to conclude that 'advanced technology such as mobile technology, virtual communications, and algorithmic computing' (p, 2) can deprive workers of their full creative potential when collaborating online. This is due to a lack of careful consideration of the 'inner time' and 'social time'. Hence, Jarvenpaa & Välikangas depict advanced technology negatively and promote more attention to be paid to human face to face interactions. Both Saad & Agogué (2020) and Jarvenpaa & Välikangas (2020) contribute to an understanding of how mobile technology could enable online collaboration, but those mobile devices can be a source of tension between people and productivity factors. This is expanded in the next section.

1.3.1.2 Data Extraction and Synthesis

The SLR provides some relevant results that are not directly related to the keyword searches. Firstly, there are no publications that include all the keywords if they are combined, for example with the Boolean AND operator. This represents a gap in the body of knowledge about 'knowledge management', 'collaboration', 'creativity', and 'mobile technology'.

Second, in selecting 'keywords' it became obvious that there exist variations in how terms are used in the literature. There is an undeniable degree of subjectivity due to the linguistic choices or the field of expertise of the authors, where when compared to other authors, the use of a term may be very precise or more general. Amongst the 43 shortlisted publications, we identified themes and topics following an approach based on Gioia et al (2013) that provided a pivotal step in the contextualisation process, such as the notions of 'trust' or topics like 'serendipity', 'identity', and 'relationship' (Carter, 2015 [38]; Akgün et al., 2012 [73]; Wu & Lederer, 2009 [91]); and 'sociomateriality' with topics of 'materiality', 'social media', and 'enactment' (Faulkner & Runde, 2013 [47]; Avgerou, 2019 [11]; Nan, 2011 [83]); organisational 'structuration' with the topics of 'knowledge creation', 'learning', and 'dynamics' (Roberts et al., 2012 [70]; Baird & Maruping, 2021 [1]; Kretschmer & Khashabi, 2020 [4]; Tarafdar et al., 2019 [13]; Chen & Kannan, 2015 [41]; Jones & Karsten, 2008 [94]; Jansen et al., 2006 [99]); 'network' theories and associated topics of 'information diffusion' and 'dissemination' (Aral, 2011 [80]; Zadeh et al., 2019 [15]; Lyytinen et al., 2016 [34]; Davison et al., 2013 [46]; Cavusoglu et al., 2010 [88]; Doak & Karadimitriou, 2007 [96]; Torre & Rallet, 2005 [100]); and the 'productivity' and 'efficiency', 'slack' or 'absorptive capacity' topics (Alvarez et al, 2020 [05]; Rahrovani & Pinsonneault, 2020 [8]; Xue et al., 2012 [67]; Todorova & Durisin, 2007 [98]); creativity and topics 'openness', 'individuals' or 'environment' (Dechamp & Szostak, 2016 [33]; Grimes, 2018 [18]); knowledge management with topics like 'organisation', 'contextuality' or 'meaning' (Carlile, 2002 [104]; Kraaijenbrink, 2012 [71]); or else 'innovation' or topics such as 'co-creation' and 'system', 'technology' (Swanson & Ramiller, 1997 [106]; Schweitzer et al., 2015 [37]; Qiu et al., 2015 [40]; Brown et al., 2010 [87]); and 'community' or 'interest-based' practices (CoP, CoI) associated with topics 'collaboration', teamwork' and 'online' (Faraj et al., 2011 [84]; Chen et al., 2018 [16]; Jaspers et al., 2012 [68]).

Following is a more detailed analysis of the themes that have been identified in relation to the key references and corresponding concepts:

COP/COI

Knowledge Management and Information Sciences researchers have highlighted the importance of collaboration through the Internet (Brown et al., 2010 [87]; Jaspers et al., 2012 [68]; Faraj et al., 2011 [84]; Qiu et al., 2015 [40]). For example, Faraj et al. (2011) [see Table 1.4 #84] showed how to achieve collaborative practices through the community by including factors such as 'passion', 'identity' and the 'social disembodiment of ideas'. However, Faraj et al. (2011) do not address the specificity of online communities (Saad & Agogué, 2020), and more importantly for this research, the means used to enable interactions like Augmented Reality (AR), Virtual Reality (VR), and mobile technology. Kane et al. (2011) tackled this concept by identifying four affordances where social media supports intellectual capital creation through processes of metavoicing, triggered attending, network-informed associating, and generative role-taking. Moreover, instead of locating agency in humans (emphasising intentionality and subjectivity), or in technologies (as more or less autonomous agents), Barad (2003) conceives of agency as the "enactment of iterative changes to particular practices through the dynamics of intra-activity" (p. 827). This last point will be of particular interest during our research.

SOCIOMATERIALITY

Faulkner & Runde (2013) [see Table 1.4 #47] further demonstrated that it is important to take into consideration the category of 'nonmaterial technological objects' that constitute and contribute to Information Systems. Also, Avgerou (2019) [11] stated that theories of technology and theories of action should increase awareness of their context. Volkoff & Strong (2013) claim that the innovation mechanism starts in a space of possibilities that emerges from the architecture of infrastructure and operations, and enables the emergence of ideas leading to new services. Subsequently, external partners facilitate the development of these ideas as innovations that are added to the infrastructure as new services. The cycle repeats as the space of possibilities expands. For the process to produce new structures, a high-level generative mechanism that incorporates both a structure-initiated space of possibilities and an actor-initiated development of new ideas is required. In their theory of technology-mediated organisational change, Volkoff et al. (2007) describe a cycle that has three phases, structural conditioning, social interaction, and structural elaboration or reproduction. While all these findings are useful for better understanding sociomateriality and enacted technology practices, there exists a gap in the literature with regard to the capabilities and capacities of mobile technology (Nova, 2018) and its application in professional and organisational praxis (Whyte, 2020, citing Erickson, 2018: 301).

INNOVATION

Focusing on sociomateriality in conjunction with ongoing collaboration via the Internet, many researchers have failed to account for the impact of internal organisational practices or the immediate effect of diffusion of the innovation (Swanson & Ramiller, 1997 – see Table 1.4 #106). Impacts take effect during social interaction, so we add 'thanks to mobile technology'. Moreover, although some researchers highlighted the benefits of information systems affordances (Karahanna et al., 2018) [17], we claim that there is a gap in the literature with regard to the specificity of mobile technology and capabilities, and their ability to manage organising practices. These may be observed as the role of 'individual reflexivity' and resistance to the adoption of technology (Dobson et al., 2013) [49], technical issues that cause negative impacts, or negative experiences when dealing with IT (Salo et al., 2020) [3].

PRODUCTIVITY & STRUCTURATION

Alvarez et al. (2020) [Table 1.4] discussed the notion of value creation, uncertainty, and social dimensions of firms in the 21st Century. They stated that 'the labor force that is left to be managed will, to a large extent, consist of individuals who are well educated, independent, mobile, and well aware of their value' (p. 714). However, they advocate that instead of relying on economic measures, new managerial theories ought to be established, but they neglect pragmatic elements such as 'collaboration' and 'technology'. To a certain extent, the framework by Alvarez et al. (2020) conceptually embraces the perspective of Roberts et al. (2012) [see Table 1.4 #70] on the capacity of organisations to absorb information technology.

Todorova & Durisin (2007) [98], referring to Cohen and Levinthal (1990), highlighted the significance of social interaction and dynamics without much attention to social media, online communication or 'remote virtual interactions that [the smartphone] enables' (Whyte, 2020, 431). Similarly, Rahrovani & Pinsonneault (2020) [8] analysed two distinct innovative behaviours, innovative IT use and innovating with IT, and the role of slack resources with potential motivational consequences. However, they fall short of addressing the affordance of mobile technology and its impact on innovation processes and outcomes. A regular theme is in line with what Whyte stated; 'the physical nature of smartphone use, and the smartphone itself, has organizational consequences which raise new methodological demands for research in organizations' (p. 439).

TRUST

Akgün et al. (2012) [73] focussed on team sensemaking capability and states that 'team autonomy, interpersonal trust among team members, and open-mindedness of team members' provide positive effects in the innovation cycle. The notions of relationship, identity, and trust are congruent with technology and specifically, mobile technology. It may be said that mobile technology is a personal mass medium and provides accurate audience information (Ahonen, 2011). Carter (2015) [see Table 1.4 #38] aligns with this viewpoint with a definition of IT that says that the 'individual consciously engages with (IT), as an end-user, to produce, store, and communicate information; that could be accessible to that person across time and space; and that may provide breadth of access to others in the person's social world' (p. 932). While this definition includes mobile devices and features like being 'permanently connected' and 'always carried' (Ahonen, 2011), Carter (2015) does not deal with collaborative practices, but that is provided by Nonaka & Takeuchi (1995) as the *ba*. In this context, the notion of *ba* is discussed further in relation to online practices and capabilities; we will investigate this point in more detail in *CHAPTER 4*. Although Carter's (2015) [38] results do not mention the serendipitous framework that may appear in online interactions, Makri et al. (2015) revealed that during multiple information encounters enabled by the affordance of mobile devices, serendipity emerges as an important factor in relation to knowledge creation and learning. Therefore, further inquiry to reveal 'the power and effects of the smartphone' (Whyte, 2020, p. 439) should be undertaken.

NETWORK

Prior to Whyte's (2020) statement that 'the locus of organizing becomes distributed' (p. 431), Aral (2011) [see Table 1.4 #80] questioned how 'individual characteristics relevant to adoption are distributed throughout a network and how those characteristics tend to be correlated within and across individuals will likely significantly affect opinion leadership and social contagion' (p. 222). Also, Doak & Karadimitriou (2007) [96], basing their views on *Actor-Network Theory* (ANT) (Latour, 2005), highlighted the complexity of interactions between actors and emergent networks that facilitate information diffusion while Torre & Rallet (2005) [100] state that it may be beneficial to consider the geographic and organisational proximity between actors. Boschma (2005) echoes this viewpoint, that geographical proximity favours innovation and then proposed further insights about proximity dynamics where collaborators are physically interacting. Thus, beyond the physical and virtual, we claim that mobile technology expands the boundaries of collaborative practices through a 'phygital' space. We develop this concept in *CHAPTER 5*.

Additionally, Lyytinen et al. (2016) [34] described four categories of "emerging innovation networks [that are] supported by digitalization: (1) project innovation networks; (2) clan innovation networks; (3) federated innovation networks; and (4) anarchic innovation networks. Each network involves different cognitive and social translations - or ways of identifying, sharing and assimilating knowledge" (p. 47). Therefore, we examine the role of mobile technology and productivity with respect to 'glocal network', amidst global and local with particular attention to the notion of proximity (Boshma, 2005).

KNOWLEDGE MANAGEMENT

With regard to knowledge and its landscape limits, Carlile (2002) [see Table 1.4 #104] defined three types of approach: 'syntactical', considering that 'integrating devices are inherently syntactical "processing" tools' (p. 453); 'semantic', presenting 'integrating devices' 'as processes or methods' (p. 453); and 'pragmatic', providing that 'integrating devices' permit 'that knowledge has to be transformed; to create new knowledge, old knowledge has to be changed' (p. 453). Carlile (2002) [104] referred to Lawrence & Lorsch's (1969) definition of integrating devices that 'coordinate the activities intra- or inter-subsystem, and [...] are required for the organization to perform effectively' (p. 6). Yet while these discussions are of some value to the research, in terms of knowledge creation and its limitations (loss, share, retention, exchange, translation, and a few more) and knowledge as 'localised, embedded, and invested in practice' (Carlile (2002), p. 442) [104], they do not address the *ba* (see *CHAPTER 4*), or knowledge management and communities as defined by Nonaka & Takeuchi (1995). Furthermore, Nelson & Winter (1982) stated that 'the [...] environment is determined partly by conditions outside the firms in the industry or sector being considered-product demand and factor supply conditions, for example-but also by the characteristics and behavior of the other firms in the sector' (p. 401) and we believe that in relation to pervasive media (Jenkins et al., 2013), such as mobile devices and learning through technology (Levallet & Chan, 2019), that more research is required (developed in *CHAPTER 5*).

CREATIVITY

Dechamp & Szostak (2016) [see Table 1.4 #33] claim that organisational creativity is subject to 'the production of discourse, the creation of opportunities to transform the idea into a project, the roll-out of the project, and the protection of the idea and the project' (p. 61). The argument does not take into account the pervasiveness of mobile devices and their ease of use, idea exchange, and data sharing. By the same token, none of the

previously cited authors have discussed 'how [mobile] devices can make interactions visible or invisible' (Whyte, 2020, p. 436). Thus, Whyte's (2020) concludes that 'to understand organizing practices requires a more explicit consideration of the power and effects of the smartphone and other digital devices and new questions arise about how organizations and management can be accomplished'; this research aims at closing the gap in the literature.

During the SLR process, two related topics emerged: 'private vs professional' (Benlian, 2020; Bellezza et al., 2017; Ramarajan & Reid, 2013) and 'affordances' (Salo et al., 2020; Karahanna et al., 2018; Dobson et al., 2013; Cenfetelli & Schwarz, 2011; Sarker & Valacich, 2010). Consequently, we took them into consideration and identified relevant authors like Volkoff & Strong (2013) and Carayannis et al. (2013), who investigated the relationship between affordances and online knowledge sharing or creation via mobile devices, and Cavazotte et al. (2014) and Obushenkova et al. (2018), who specifically inquired about the impact of smartphones on worker engagement or psychology.

However, while in search of a means to provide an approach to sense-making (meaning-making) and sense-giving (providing meaning for others) (Nag & Gioia, 2012, p. 424) to offer plausible but not logically validated selection criteria (Weick, 1989), we broadened the selection criteria to include alternative explanations of our observed anomalies (Sætre & Van de Ven, 2021, p. 8). We extended the range of literature in knowledge management to include other disciplines such as Management (KM, KI, KL, KR, KS, KT, OI, ANT), Learning (LS, OL, CoP/CoI) and Information Sciences (IS, ICT, IPS, IT). When aligned with Amabile (1998), our collection of interviews and surveys gave us more insight into the richness and complexity of creativity within business organisations relating to mobile technology. We will develop this point in further detail in *CHAPTER 2*.

There exists a large body of references on knowledge management and the Internet. Also, a large body of reference relates to the use of 'smartphones' in a very technical way in engineering and education. To be specific in this research, we consider smartphones as interfaces that propose new uses, new ways of organising work, and new ways of thinking (Vial, 2017; Serres, 2011; Ferrari, 2018; Baricco, 2015), and not just as simple tools or devices connected to the Internet.

To identify the gap between current knowledge and everyday practice in the field, we searched for relevant review papers to facilitate the development of a new theoretical framework. To do this, we draw from Paul & Criado (2020) to include the domain-based and theory development review methods (p. 2). Thus, in view of the previous SLR results, we have focused on the bibliographies of relevant articles that provide more relevant authors. On that account and showing agility in relation to maintaining a systematic procedure, an organic approach was adopted that included searching for authors and targeted publications related to specific elements in the research question, rather than addressing the question as a whole. For instance, Jarvenpaa & Välikanga (2020) claims that mobile technologies impact not only in the efficiency of organisational practices but also in the transfer or conversion of knowledge, and that challenges may include addiction, control, or technostress. Jarvenpaa & Välikanga do not address deeply knowledge management, collaboration, or creativity, leaving a gap. Similarly, Saad & Agogué (2020) identified key 'challenges and mechanisms influencing the creative process in virtual teams' (p. 9) in broad terms related to technology but do not address mobile specificity. However, they do provide dimensions such as 'team specific attributes, leadership support, trust and interpersonal connections, knowledge sharing, and technology adaptation and ease of use' (p. 34) that provide a foundation for our focus on knowledge management, collaboration, creativity and Internet, leaving further questions about mobile technology.

To summarise, the review provides insights for organisations, scholars and contributes to the themes mentioned. The review revealed gaps between fields of expertise and their respective epistemologies compared to their applications. Hence, the review opens new directions (themes and topics) for a wider and non-systematic exploration into the specific focus area of mobile technology. Both categories of themes and their related topics form the basis for in-depth inquiry, however, the key difference lies in the methodological approach. The results of this path and new discoveries are presented in the Venn diagram (Figure 1.6) and the visualisation of the themes investigated and their key associated references (Figure 1.7). The following section explains in detail the principles and organisation of the research.

1.3.2 Mapping the Terrain

With respect to the essence of management sciences, 'a discipline founded at the crossroads of economics, psychology, and sociology' (Taskin & Dietrich, 2020), this transdisciplinary research is situated at the intersection of the realms of the contributive economy (Economy), the digital economy (Technology), and the knowledge and information economy (Creativity) (Figure 1.6). This research is also located at the confluence of the *entreprise libérée* and the *entreprise traditionnelle*, within the vicinity of a constructivist approach that implies an ecosystem of partnership, collaboration, and co-creation, investigating a new definition of a working relationship and management. Indeed, based on von Krogh's findings (1998), who demonstrated that 'unlike the cognitivists, the constructionists embraced contributions from philosophers from the very beginning' (p. 150), this thesis is tackling one of the principal challenges: 'to find further enabling conditions for the fragile processes of knowledge creation' (p. 148) in SMEs. This work applies von Krogh's (1998) perspective by defining organisational knowledge as 'an act of construction or creation' (p. 134) as opposed to the 'act of representation' (p. 134) familiarly used by cognitivists. The methods are applied to see 'what ought to be' (von Krogh, 1998, p. 148) and reveal tacit, unconsciously hidden, and unsaid knowledge from participants. Also, referring to Nonaka & Takeuchi's (1995) argument that knowledge is a 'justified true belief' (p. 58), this investigation aims to highlight commonalities between personal and individual sensemaking in mobile technology practice. Hence, knowledge creation is the result of a few social interactions, which implies deciphering shared tacit knowledge to provide an explicit item of knowledge and making it public (von Krogh, 1998, p. 135).

Furthermore, Slay & Stephens (2013) defined coproduction (in our case we will refer to '(co)creation') as the result of the contributions of eclectic people, from planning to delivery, together. Later, we will explain how mobile technology can support this emergence by making the interaction less confronting than it could be in a face-to-face situation. Furthermore, although the fundamental barrier to knowledge conversion is 'the need for a legitimate language, especially a stock of words' (von Krogh, 1998, p. 135), in the following chapters we will explain that the rich-media properties of mobile technology can foster oral stories and reduce knowledge loss. This research addresses the advancing of collaborative and innovative practices, systems, and structures by showing how mobile technology can enhance 'enabling conditions that allow knowledge creation to happen' (von Krogh, 1998, p. 136).

Innovation is one of the key focal points of this investigation and Figure 1.6 is a creative graphical data representation that portrays the dense and complex qualitative information encountered during the literature review process. The figure correlates the references collected during the whole research and almost all the citations that support this research. It is intended that the figure offers to visualise the relationships between items on the *REFERENCES* list. Figure 1.6 applies the principles of the Venn diagram from the field of mathematics, to compare the propositions established, and to show relationships, groups, and connections between words, ideas, concepts, and paradoxes. By propositions, we suggest making meaningful connections inside the complex data that has emerged from convergent and divergent information patterns. By the same token, the distance between the dots can represent two things: the first is proximity, scilicet a direct intra-textual citation between references; the second is an association, videlicet two concepts that are very close or similar, although not necessarily or explicitly connected because of their distinctive fields of cognition such as sociology, IS, KM or LS. Thus, the closer a dot is to the centre of the figure, the more its associated reference (reinforced by the number corresponding to the alphabetical ordering of the *REFERENCES* list) is directly relevant to the research question. Conversely, the further a dot is away from the centre of the figure, the less relevant the reference is, while still contributing indirectly to the context of the research or its methodological development. Hence, the figure is designed to enable a reader to position references, to be able to locate them amongst each other and interpret patterns between apparently 'disconnected piece[s] of information' (Shoemaker & Day, 2009, p. 86), to clarify, and to enhance the seeming pandemonium.

The construction of Figure 1.6 generated a valuable onboarding (*organisational socialization*) experience and the 'doing of it' (the praxis and the poiesis) informs some of the decision-making of the research and sets the foundation for the narrative of the following chapters. The dataset comes from various explorations and comparisons of data, suggested readings, references obtained from reference citations, and knowledge gaps created by the analyses of interviews. The resulting informational illustration of qualitative data attempts to synthesise primary and secondary data that supported the analytical reasoning in a comprehensive way. The figure portrays context (fields of investigation, authors), insights (correlation between references), associations (mainly by content and focus), and causality (in relation to the research question). The graphical treatment of shape, primary and complementary colours, iconography (dots), typography, and labels are visual attributes that were carefully chosen to convey hierarchy and meaningful comprehension of the hidden architecture (Cohendet & Simon, 2008) of knowledge amidst most of the references.

The figure presents our *justified true belief* (Nonaka & Takeuchi, 1995; Nonaka et al., 2000), supported by abductive reasoning (von Krogh, 1998) about the primary fields in this research. The primary fields are differentiated as 'economy' (yellow –primary colour), 'technology' (cyan –primary colour), and 'creativity' (magenta –primary colour). Intersections of the primary fields are the 'creative economy' (orange –yellow plus magenta), 'innovation' (green –cyan plus yellow), and 'management' (purple –cyan plus magenta). Moreover, the distinctive colours assist the reader to distinguish between categories, to get a broad feeling about the number of references cited in each section.

Concerning the coloured dots, they match the colour of the discipline in which they are located, they represent the references used during the overall argumentation process and the literature reviews undertaken articles published during the research. The dots are arrayed in a *confidence interval* fashion as a rough estimate of the observed, analysed, and synthesised data. This qualitative and abductive approach fits in well with what we develop in the next chapter, *sense-making*. In addition, the central part of Figure 1.6 (black dots) represents the heart of the research in which the closer a point/reference is to the centre of the visualisation, the more it relates and partly answers the research question or sub-question.

Finally, in order to make our tacit knowledge more explicit about terms used in fields of research and application, and what we meant (implied meaning), we added two other keywords to substantiate the way we understand the principle term. For instance, besides 'innovation' we added 'open innovation' and 'sustainability', by 'creative economy' we refer to 'collaboration' and 'digital', and by 'management' we pay particular attention to 'knowledge' and 'ecosystem'. Additionally, to convey to the reader some of the implied meaning, we added one of the key conceptual references for the development of this investigation.

While the approach appears to lack precision, present complex information well (Héraud & Burger-Helmchen, 2019). The approach simplifies how connections may be shown, which improves the capacity for understanding in the viewer, which in turn provides an opportunity for deeper enquiry. A deeper penetration into the context offers greater scope for active engagement and exploration into the territory of the research domain. We return to these enquiries in the following chapters.
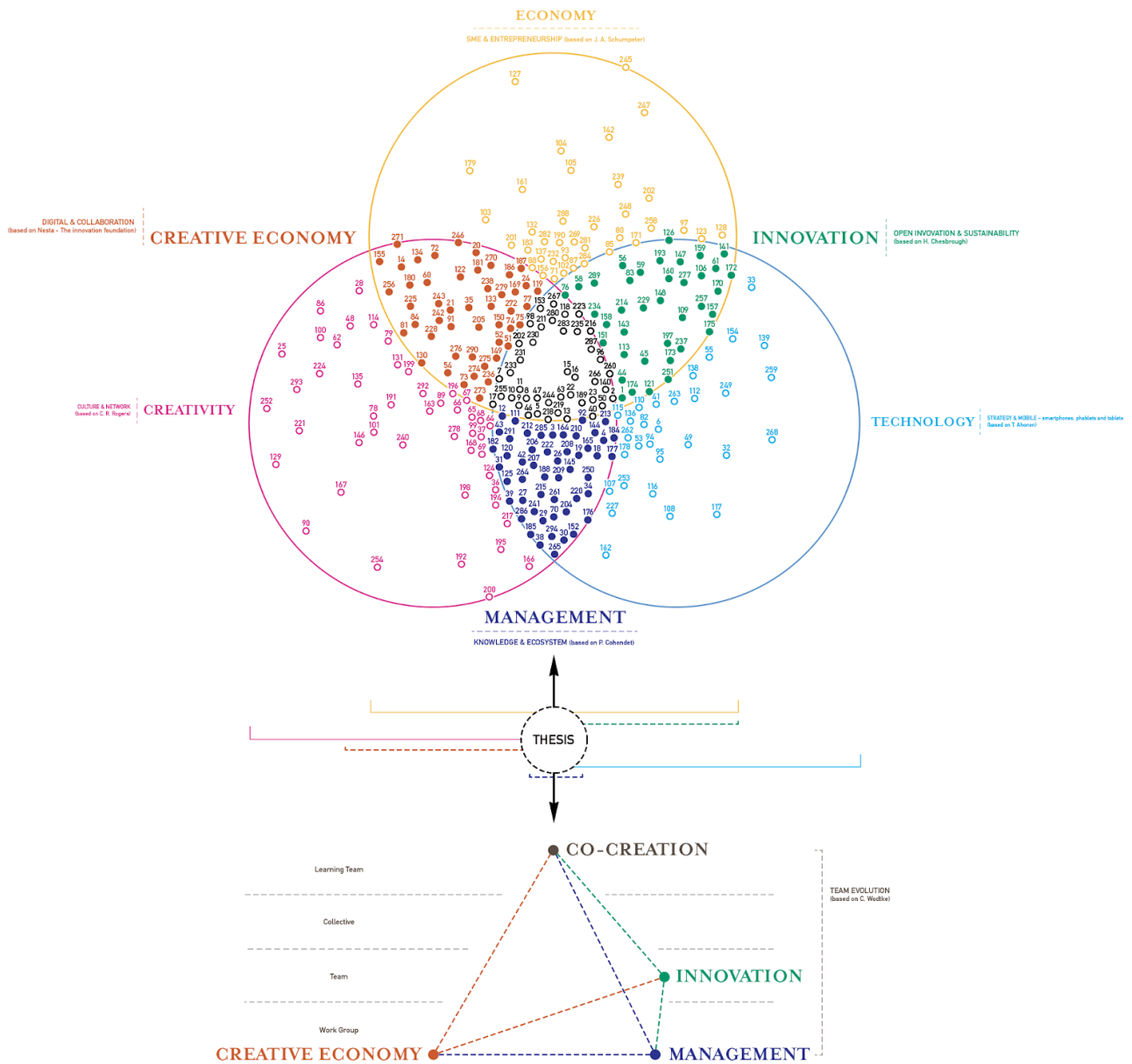
Figure 1.6 Mapping the terrain.: visualising the context and the theoretical background of the research.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/3hYqUV0]

1.3.3 Fields of Investigation

While Figure 1.6 aims to provide the reader with a fair and holistic panorama of this research, Figure 1.7 illustrates a more detailed illustration of the concepts that encompass the variables related to the inquiry. Figure 1.7 presents a KM & ICT frame of reference for the literature sources that have been reviewed. Since our research focuses on the innovative character of mobile technology and following the Venn diagram principles discussed earlier, Figure 1.7 shows that innovation is at the intersection of the management of knowledge, creation, and organisation. The figure also presents primary fields as well as affiliated concepts and categories; creativity management (orange), organisational management (green), and knowledge management (blue).

The literature and transcription analysis has identified key themes linked to categories (Gioia et al., 2012). For example, the themes collective, open, cocreation, inverse, and frugal are linked to the category 'innovation' (colour: magenta). Also, the variation of hue density (100%, or 50%) symbolises the level of importance the category has to the research, for example, primary themes linked to 'innovation' are collective and cocreation (100% magenta), whilst inverse and frugal are secondary. Thus, the density of hue presents a way to prioritise relevant and pertinent inputs for this research.

For each theme in Figure 1.7, a significant reference is cited under the theme label. For example, the category 'innovation' has five themes linked to it and one theme, 'cocreation' (100% hue) has the citation von Hippel (2010). The approach is also applied to the fields of creativity management, organisational management, and knowledge management. Hence, as with Figure 1.6, Figure 1.7 comprises a complex synthesis of literature and discussions during the research. These points are explicated later.

CREATIVITY
MANAGEMENT

CULTURE
(DeFillippi et al., 2007)

CONTEXT
(Amabile, 1998)

TEAMWORK
(Fruchter, 2001)

FRAMEWORK
(Slavich & Svejenova, 2016)

VALUE
(Cohendet et al., 2010)

CREATION
(Nonaka et al., 2000)

TRANSFER
(Allen, 1977)

SHARING
(Anders, 2016)

BARRIER
(Paulin & Suneson, 2012)

SOCIOLOGY
(Alter, 2016)

INTERACTIONS
(Woodman et al., 1993)

ROUTINE
(Glaser, 2017)

NETWORK
(Cecere & Ozman, 2016)

TECHNOLOGY
(Anders, 2016)

ENVIRONMENT
(Morel et al., 2018)

INNOVATION

KNOWLEDGE
MANAGEMENT

ORGANISATIONAL
MANAGEMENT

COLLECTIVE
(Suire et al., 2018)

OPEN
(Chesbrough, 2010)

COCREATION
(von Hippel, 2010)

INVERSE
(Burger-Helmchen, 2015)

FRUGAL
(Rajou, 2015)

Figure 1.7 Visualisation of the investigated fields, and their key associated references.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/2RVBnGg]

1.3.4 Organisation (Chapters & Publications)

Figure 1.8 is a visualisation to help the reader to understand the thesis organisation. the figure shows underlying reasons, motivations, and perceptions for the research (Weick, 1998; Orlikowski, 2002). At times the research followed pathways that led to limbo and at other times, to knowledge discontinuity. These are represented symbolically as sparks (knowledge conversion), bubbles (thoughts), and stars (knowledge loss). The principal research question is represented as an end tag, </> (pink), that incorporates actions like context analysis, knowledge development (*justified belief*; Nonaka et al, 2000), formula creation (propositions, 'sense-making'; Gioia et al., 2012), verification of established patterns (weak signals, 'disconnected piece of

information'; Shoemaker & Day, 2009) or data, and implementation of the results into a relevant form of language.

The development of the research context, methodological framework, and the conceptual model, produced three sub-questions ('</>', cyan) that are developed in more detail in *CHAPTER 4*, *CHAPTER 5*, and *CHAPTER 6*. The sub-questions have led to the publication of four articles (two in *CHAPTER 4*, one in *CHAPTER 5*, and one in *CHAPTER 6*). The chapters and published articles are supported by the six phases of data collection (detailed in *CHAPTER 2*): *Phases 1 & 2* for *CHAPTER 4*, *Phases 1, 2 & 3* for *CHAPTER 5*, and *Phases 4 & 5* for *CHAPTER 6*. Additionally, a combination of the articles , *Phase 06* of the data collection, and social knowledge (Levallet & Chan, 2017), contribute to the formation of conclusions and potential new research directions.
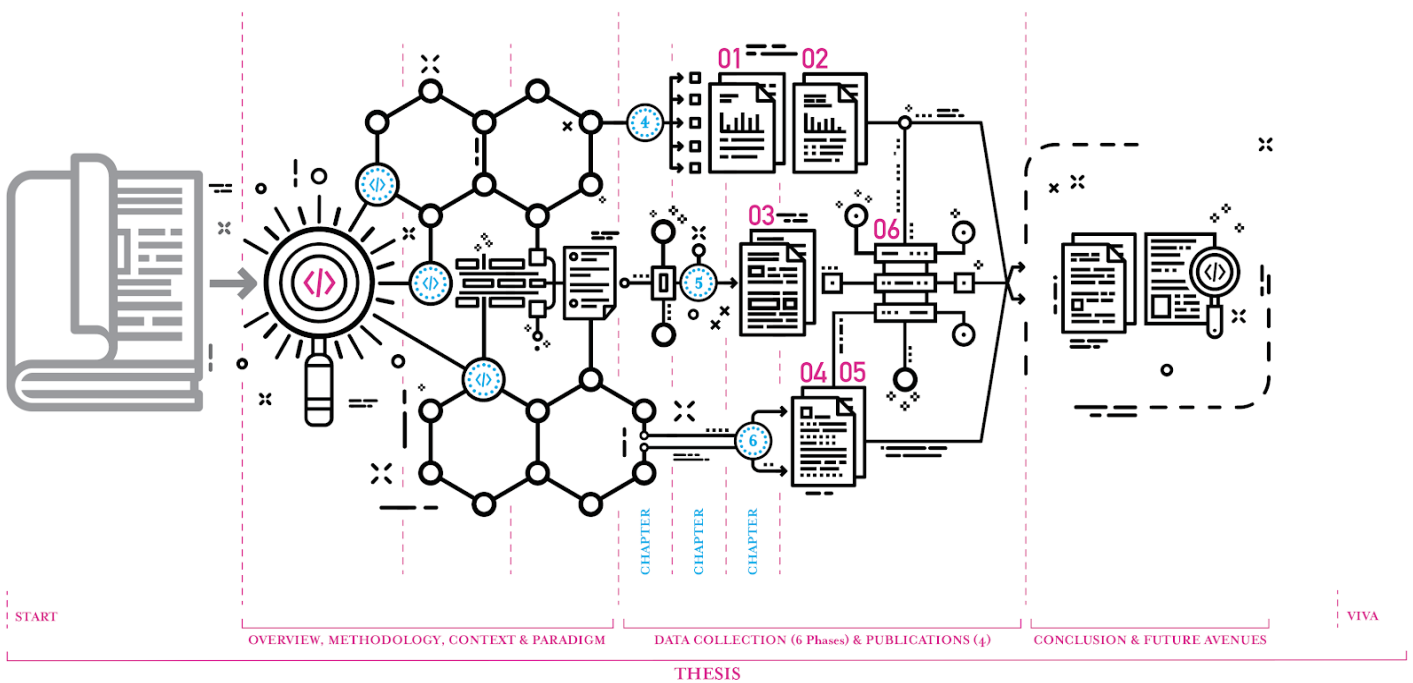
Figure 1.8 Visualisation of the organisation of the thesis chapters, and related publications – Appendix 4.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/33gZrtI]

1.4 Contributions

This thesis highlights three elements associated with mobile technology: An enrichment of fluidity in innovation processes, the enabling of individual and communities of practice, and the enhancement of value creation and value capture. More details will be provided in the next chapters, visualised below.
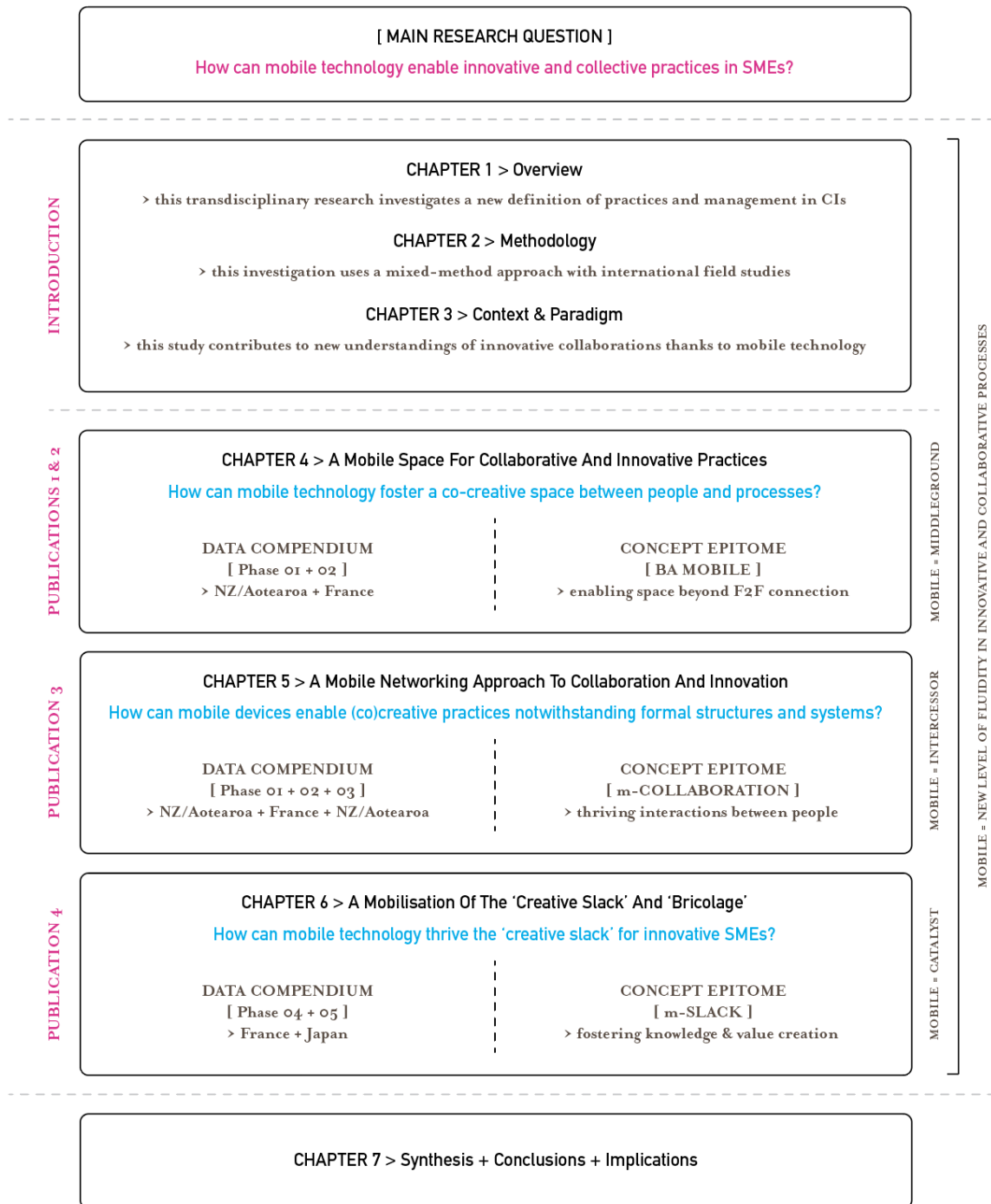
Figure 1.9 Visualisation of the thesis architecture.

1.4.1 Contribution to Scholarship

In this thesis a gap in the literature about the relationship between mobile technology and knowledge management in organisations is addressed, specifically with respect to collaborative and innovative practices within SMEs in CIs. Some scholars have viewed managerial creativity as a key factor for growth and technology as a creative tool, and as a new paradigm for productivity. This inquiry enriches that view.

Furthermore, this investigation contributes to new understandings of the impact of mobile technology on innovation during collaborations in an international context. Moreover, the research updates the concept of *ba* (Nonaka & Takeuchi, 1998), which fosters a new kind of enabler space (Morel et al., 2018) through enabling technology (Teece, 2018) beyond organisational boundaries, provides a freshened perspective on the creative slack (Cohendet et al., 2010) and the associated notion of organisational *bricolage* (Cunha, 2005; Duymedjian & Rüling, 2010). The research focusses on mobile technology as an intercessor between the organisational slack (Penrose, 1959) and the creative slack (Cohendet & Simon, 2008).

1.4.2 Contribution to Practice

This research contributes to practice by demonstrating how organisations can increase or improve international and collective collaborations (Chesbrough et al., 2014; von Hippel, 2013) by focussing on value creation and value capturing through digital innovation. This is shown as achievable during the *exploration* phase of a project and the end of the *exploitation* phase (March, 1991; Capdevila, 2015). Also, the research shows that the organisation can enhance financial investment by addressing the organisational or creative slack (Cohendet et al., 2010). Consequently increasing employee knowledge, and the quality and relevance of outcomes for both employees and customers.

However, a significant factor during the research has been the effects of the coronavirus (COVID-19) pandemic, which forced a large proportion of the workforce to change how and where they work, interact, and manage projects. The ad hoc change to *Work From Home* (WFH) is an area where the findings of this thesis ought to be applied. We argue that, rather than acknowledging what actually exists and changes that occur, managers tend to project their beliefs and understandings onto their working environment (Schoemaker & Day, 2009, p. 88). In response, practitioners and policymakers ought to take the findings into account when assessing managerial effectiveness and allocation of firm resources, for example, the research provides insights about how to actively surface weak signals (tap local intelligence, leverage extended networks, mobilise search parties), amplify

interesting weak signals (test multiple hypotheses, canvass the wisdom of the crowd, develop diverse scenarios), and probe further and clarify (confront reality, encourage constructive conflict, trust seasoned intuition) (Schoemaker & Day, 2009, p. 84). Schoemaker & Day (2009) state that 'the major problem is that managers are insufficiently aware of cognitive and emotional biases that can cloud their judgement when interpreting weak signals. When ambiguity is high, we can easily torture the weak data until it confesses to whatever we want to believe. Countering these insidious tendencies requires leadership as well as the mastery of various tools to combat the pernicious filters that obscure and distort important weak signals. In a fast-moving marketplace, none of us can afford to miss what we are seeing.' (p. 88).

1.4.3 Contribution to Contemporary Issues

Since *management* means making collective action effective and efficient, this thesis highlights some emerging phenomena associated with mobile technology, which are the hallmark of complex systems (Héraud et al., 2019). The research contributes to the current analysis of innovation and the management of creativity (Amabile, 1998; Caniëls & Rietzschel, 2015) by listening to practitioners and workers, revealing weak signals that provide a protocol and recommendations for effective implementation (fertilisation from design/creation to management). Therefore, this research contributes to the notion of organisation *bricolage* (Cunha, 2005), to the concept of *ba* and its associated *Socialisation*, *Externalisation*, *Combination*, *Internalisation* (SECI) model and especially the *Socialisation* phase (Nonaka & Takeuchi, 1995), and to the concept of *creative slack* (Cohendet et al., 2010) in relation to mobile technology attributes and practices. The research suggests that the use of mobile technology and its current developments (5G, Web 4.0, Augmented Reality (AR), Virtual Reality (VR), Mixed Reality (MR), and *phygital*, to name a few) provide a new level of fluidity in innovative and collaborative processes.

CHAPTER 2 – Methodology

Re intellecta, in verbis simus faciles (Clearly states what is well-conceived) – Schopenhauer

2.1 Introduction

This research investigates the three most frequently encountered paradigms in management research practice: positivism, interpretativism and constructivism (Chabaud & Germain, 2006, p. 204). Table 2.1 is a summary of the key attributes and characteristics of the paradigms synthesised by Chabaud & Germain (2006)(see *Appendix 5.* also).

	Positivism	Interpretativism	Constructivism
Ontology	Realist Hypothesis Reality is "objective" data independent of the observer, which can only be understood imperfectly or through probability (post-positivism)	Relativist Hypothesis Reality is perceived or interpreted by knowledgeable subjects.	Relativist Hypothesis Reality is intentional, constructed upon interaction with the object, local and specific.
Epistemology	Objectivism Principle of the neutrality and imperfection of knowledge. The results are probably true.	Interpretation The researcher interprets the experience and statements made by actors who themselves produce interpretations on the topic.	Interdependence between researcher and his object Projects and interpretations co-constructed with the actors in an interactive framework.
Knowledge Project	Describing, explaining, confirming Discovering the reliability of data	Understanding Empathic comprehension of actors' representations	Constructing Designing a project phenomenon
Methodology: consequences for RQD	RQD possible in principle The researcher can assume an empirical discovery to be "true" or close to the truth. Any validated data becomes part of the re-usable stock of knowledge. RQD is possible once the original research protocol is verified and its quality confirmed.	RQD possible in principle The researcher works on plausible interpretations. Regarding original data, he can compare his interpretations to those of initial researcher. The researcher borrows interpretations regarding a reality that is itself interpreted by the actors.	RQD debatable The researcher works on constructions based on singular interaction. The original researcher can, in principle, rework the said constructions (he knows the neglected aspects of the fieldwork) according to an identical project. Circulating both the data and the editing among projects and among researchers is extremely debatable due to the unique construction that is based on the interaction between the researcher and the actor(s).

Table 2.1 Key attributes and characteristics of the paradigms in management research practice; freely adapted by Chabaud & Germain, 2006, from the categories of Giordano (2003, p. 25), Perret and Séville (2003) and M'Bengue, Vandangeon-Derumez and Grimand (2000). Also, RQD refers to 'Re-using Qualitative Data'.

Based on the international dimension of the research and features of each approach, we opted for a qualitative, mixed-methods approach (Kolleck, 2013) of positivism and constructivism. However, a positivist approach suggests the following sequence loop (Wacheux, 1996, p.39):

Theory > Hypothesis > Observation > Generalisation > Theory

and because of the Talanoa approach, developed further in *Phase 01 – Genesis (Aotearoa New Zealand)*, we apply the following approach from Gioia et al. (2012):

To summarise, this research adapts Viller (2005) and Gioia et al. (2012) as shown in Figure 2.1, the differences previously described.
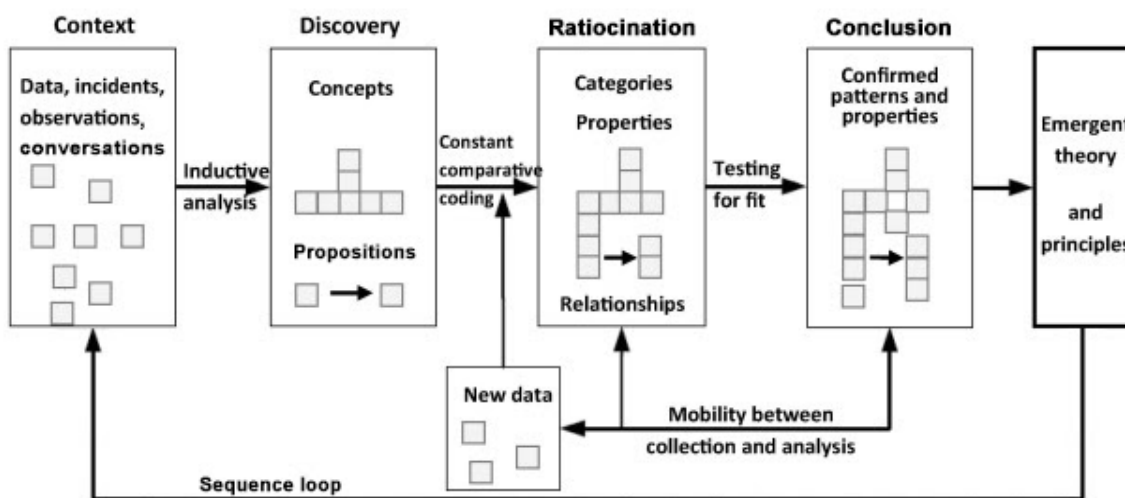
Figure 2.1 Qualitative mixed-methods approach (positivism and constructivism), adapted from Villiers's (2005) and Gioia et al. (2012) model.

2.2 Research Design

'Where the cognitivists searched for heuristic methods to problem solving, the constructionists investigated adaptive methods. Where the cognitivist searched for deductive reasoning patterns, the constructionist studied abductive reasoning. Where the cognitivist searched for representable knowledge (symbolic), the constructionist focused on know-how (action)' (von Krogh, 1998, p. 150)

This research is situated within a constructionist paradigm and via a qualitative and pragmatic approach that applies multiple techniques simultaneously or sequentially. For example, we started with face-to-face conversations with international participants, later we used a focus group approach, and then we used the previous findings to develop a questionnaire to determine characteristics more precisely.

The approaches have informed how data were analysed, although some of the qualitative findings could benefit from quantitative data analysis. Nevertheless, the approaches provide triangulation between theoria (thinking/theory), poiesis (making/practice), and praxis (doing/process). Significantly, we used multiple perspectives to produce results (theory triangulation) from a collection of data sources (data triangulation), and we used multiple methods (methodological triangulation) supported by abductive inference. Therefore, this research applies a qualitative approach supported by in-depth cross-narrative analyses, observations and field notes, surveys, and questionnaires, from which findings were synthesised. We also used abductive reasoning as a complementary method to strengthen the triangulation of the *Literature Review*, *Narratives*, and data gathered from workshops, surveys and questionnaires, observations, and the researcher's expertise in mobile technology.

2.3 Progression

In terms of sequence, Figure 2.2 provides a visualisation of the research journey, which highlights the key occurrences of the data collection processes.
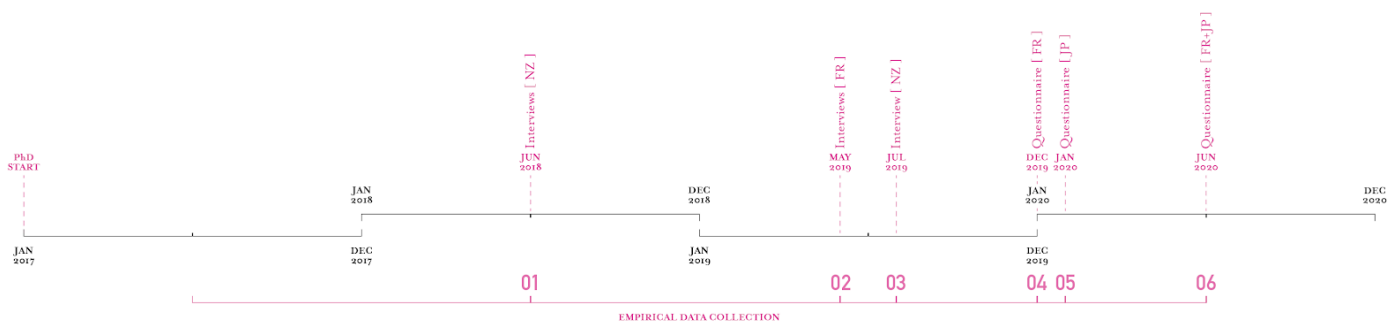
Figure 2.2 Visualisation of the key milestones (from 01 to 06) during the data collection – Appendix 6.

 [Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/2RRwcqz]

Leonardi & Barley (2008) state that 'because studying the co-evolution of the material and social requires longitudinal data, and because different technologies evolve at a different pace, researchers may need to select the technologies they study and modify their research designs to make such studies feasible' (p. 168). During the data collection phase on the investigation into mobile technology, we identified participants and excluded technophobic practitioners. Furthermore, to get a comparative cultural perspective of mobile use and practices, the investigation that started in Aotearoa New Zealand later expanded to France and Japan. To explain how mobile technology enables innovation across research, industry and society, eight narratives provide grounded support for a theoretical framework.

2.3.1 Phase 01 – *Genesis* (Aotearoa New Zealand)

Figure 2.3 presents the first step in the data collection process, in which authentic and thoughtful conversations (Talanoa) with four practitioners are organised. Vaioleti (2006) says 'the reciprocity embedded in Talanoa will raise the expectations that researchers and participants have of each other, promoting mutual accountability, which adds to the trustworthiness and quality of the research. The effect of reciprocity is such that when people give *koloa* (in this case, time and knowledge) they will expect it to be respected and honoured, and to be used well' (p. 26).

During one of the publication cycles, a reviewer in a double-blind process queried the difference between *Grounded Theory* (Corbin & Strauss, 1990; Dougherty, 2017) and *Talanoa*. Unlike *Grounded Theory*, Talanoa is an approach that needs some proposition or a topic to start with, then it gives sufficient freedom and openness during the conversation for participants to validate or refute some assertion, claim, exchange, questioning or line of reasoning. From our experience, Talanoa gives interviewees more space to express themselves and consequently, it grants authenticity to their responses and provides in-depth richness to the information harvested during the interview (Taylor & Søndergaard, 2017). Moreover, Talanoa is culturally specific, aligned to indigenous management research protocols in social sciences.

All participants work in CIs in New Zealand and were selected because of their expertise in their respective fields. The interview protocol comprised of a free conversation that lasted 27 to 44 minutes, displayed within the circular arrow in Figure 2.3. The conversation was recorded on a smartphone and supplemented with notes. The recording was transcribed into one document and key points extracted with synthesised commentary added to a second document. Both documents (transcription and synthesis) were sent to each

participant for their feedback (amendment, modification, or verification).

We triangulated the emerging data from each participant with data gathered during theoretical analyses of extant literature and through correlations with the data gathered from the other participants. Abductive reasoning provided the means for drawing hypotheses/propositions and made it possible to determine limitations and some intermediate conclusions.

In the Talanoa framework the first phase of the process. 'Toli' (magenta), deals with the collection of information (linguistic, body language, observations) in situ. Vaioleti (2006) provides a metaphorical frame; 'A Toli involves deciding on, selecting and picking the different flowers and leaves required for making the kakala (author's note: flower crown). Once picked, the flowers are ranked and arranged according to their cultural importance' (p. 28). The second phase forms 'Tui' (magenta), which corresponds to the understanding, interpretation, and compilation of the aggregated results. Vaioleti (2006) portrayed *Tui* as 'the process of making or weaving the kakala. It will involve sorting, grouping, and arranging the flowers and leaves, according to their cultural importance before the actual weaving' (p. 28). The third phase of the process is called 'Luva' and concerns the sharing of the new knowledge with the participants and a broader audience, when relevant or appropriate. Vaioleti (2006) depicted *Luva* as 'the giving away of the kakala to the wearer [...] For the researcher and her or his institution, the kakala (the new knowledge) is expected to be passed on so that others can benefit from it' (p. 28).

While this approach is pertinent to revealing weak signals or localised intelligence (Schoemaker & Day, 2009, p. 84), we acknowledge that testimonials, narratives, memories, and ideas are subject to change over time. Hence, the reliability of the collection may be called into question, but the embedded values of Talonoa ensure that it 'can be just as rigorous as existing research approaches, although in a different way' (Vaioleti, 2006, p.32). Thus, just as Schoemaker & Day (2009) identified that a weak signal is 'a seemingly random or disconnected piece of information that at first appears to be background noise but can be recognized as part of a significant pattern by viewing it through a different frame or connecting it with other pieces of information', Talanoa provides researchers with a high level of trust, relevance in terms of grounded facts, and anecdotes thanks to its reciprocal and meaningful engagement process. Hence, Talanoa encourages the unravelling of unconscious patterns, latent routines, or subconscious behaviours. The research applied the *SECI model* (Nonaka & Takeuchi, 1995; Buunk & Hall, 2018) and marries Talanoa such that *Toli* is associated with *Socialisation* and *Externalization, Tui* is comparable to *Externalization* plus *Combination*, and *Luva* corresponds to *Internalization* and *Socialisation*. For a more detailed explanation, see *Appendix 10*.

In Figure 2.3, the *Externalization* phase consists of the conversion or translation of tacit knowledge into explicit knowledge. However, some lines are not connected or are leading to a dead-end and this reflects the complexity of the sense-making process (Nardi, 1999; Gioia et al., 2013) while also highlighting our *justified true belief* (Nonaka et al., 2000, p. 7) by virtue of our intimacy with the subject (Taylor & Søndergaard, 2017, p. 43) as a consequence of the application of Talanoa. Some of the designed sparks in Figure 2.3 symbolise informal and casual conversations as knowledge conversion (Nonaka & von Krogh, 2009) and unpredictable one-off conversations with colleagues or interested non-participants. Consequently, some shared insights contributed to the progression of the research, its understanding and its consolidation.

To summarise, the methodological visualisations that follow aim to encapsulate the chaordic system (Héraud & Burger-Helmchen, 2019) that informed the research and includes some of the confusion and ignored, distorted or dismissed encounters (Schoemaker & Day, 2009, p. 88). The notion of the chaordic system is discussed in more detail in *CHAPTER 3*.
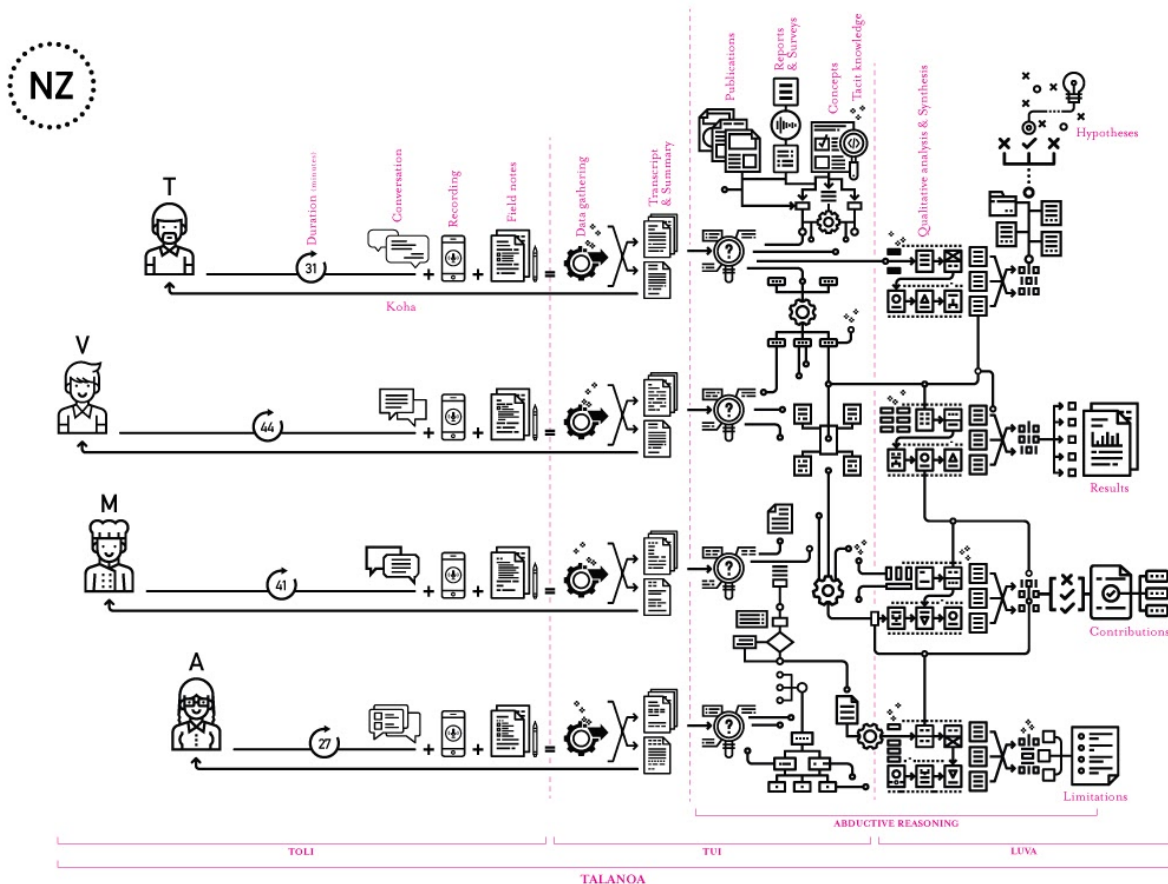
Figure 2.3 Visualisation of Phase 01 – Talanoa & abductive reasoning.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/33WQZi3]

2.3.2 Phase 02 – *Six Months Later* (France)

Based on the same protocol described in Section *2.3.1*, Figure 2.4 illustrates the second step of the data collection process.

During translation from English to French of key aspects of the research and its objectives for French-speaking participants, insight and rigour were gained by acknowledging and taking into account framing effects (Kahneman, 2011). In general, heuristics are that affected by cognitive bias in answering questions is common and this is reflected in research (Kahneman, 2011), such that humans tend to rely on their 'system 1' reactions (fast, intuitive, and emotional), while 'system 2' (slow, reflective, controlled and logical mode of reasoning) responses tend to occur later. However, when options are presented in a foreign language, 'system 2' rationality appears to prevail.

Heuristically, this approach is in line with Peirce (1903 [1998]) who defined that bringing together 'something old and something hitherto unknown' (Peirce, 1903 [1998]) is synthesised or original knowledge. In alignment with this, Taylor & Søndergaard (2017) state that this scholastic pragmatism, the reorganising and merging of elements from previous knowledge with new experience, can be a powerful tool for research, although it does require significant creative reasoning on the part of the researcher (p. 113). Similarly, an interpretive perspective developed by Weick (1995) has been employed in management with the advice to listen to oneself as well as to other people (Weick, 1998, p. 547).

Figure 2.4 Visualisation of Phase 02 – Talanoa & abductive reasoning.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/3iZlHxA]

2.3.3 Phase 03 – *Just Over a Year Later* (Aotearoa New Zealand & France)

Carrying forward the conventions in *Phases 01* and *02*, Figure 2.5 illustrates the third data collection process from seven international narratives and its combination with the previous processes.

In the process, we identified patterns while 'going back and forth from the collected data to what was anticipated. What was anticipated may have been derived from related literature and one way of pattern matching is to make comparisons with conflicting literature and similar literature' (Taylor & Søndergaard, 2017, p. 94). Consequently, to share our newly *justified true belief* (Nonaka et al., 2000, p. 7), another Talanoa with participant H was arranged. The conversation lasted longer (53 minutes) and, while reiterating and confirming previous discoveries, revealed more weak signals with the most important being *LARPing* (Live Action Role-Playing):

'*On that* WhatsApp *group, it feels like I am 'LARPing' my job that I am playing the part of the good worker. It can put a lot of pressure on me in real life when meeting with people'* Participant H

When *LARPing*, people are acting out fiction and interacting with fictional characters within a real-world environment. Informed by the practical value of this and its pertinence, we applied abductive reasoning (Peirce 1903 [1998]), leading to the *Commedia dell'arte* and its contemporary adaptation in series such *The Office*, and *Community* (see *Appendix 7*).
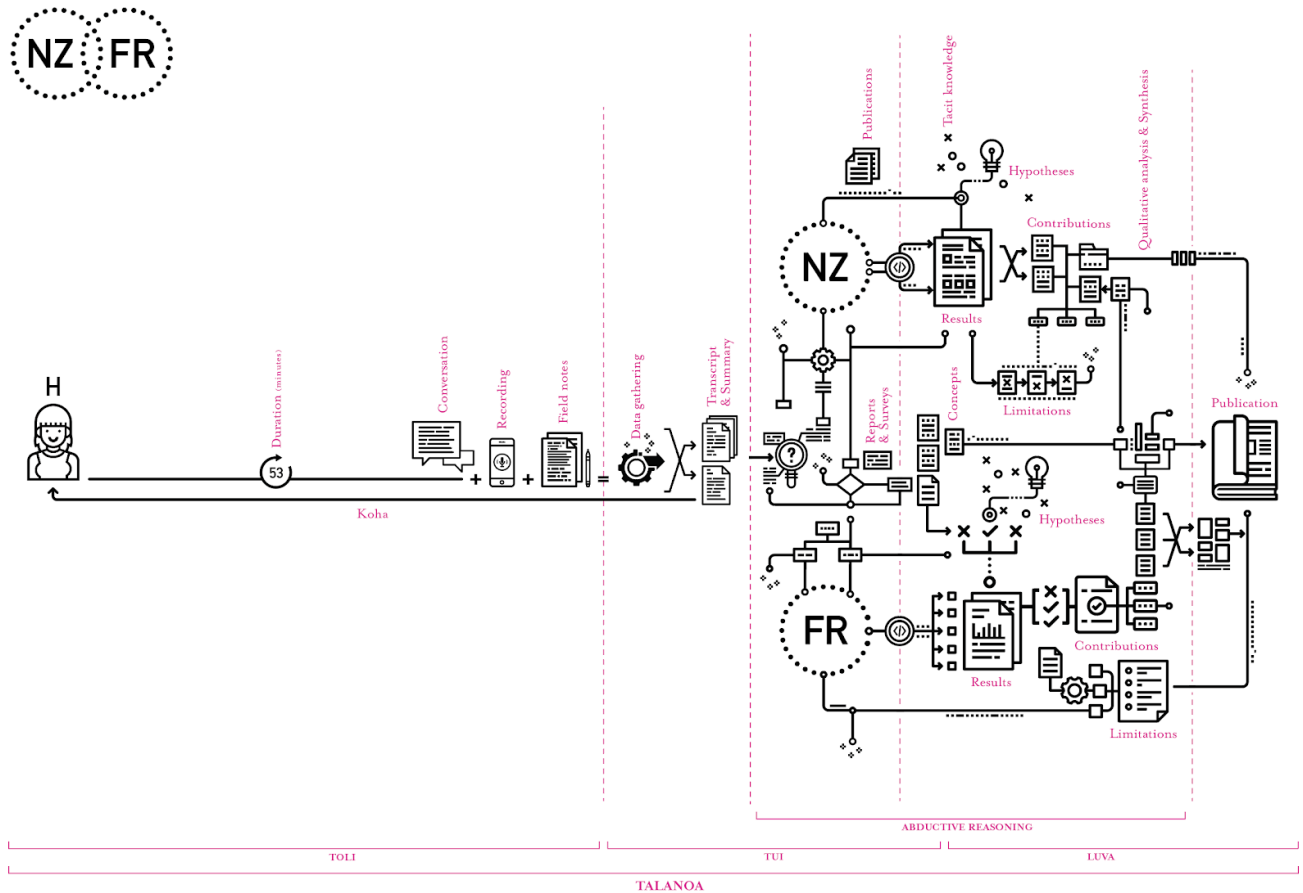
Figure 2.5 Visualisation of Phase 03 – Talanoa & abductive reasoning.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/2FVWZQb]

Figure 2.6 summarises and synthesises the processes in *Phases 01-03*.

Here P represents a λ participant, and t0 a certain quantity of time spent with P. Similar to Talanoa, Gioia et al (2013) stated that 'If we had designed our interview protocol around existing theory and terminology, we would have missed a key aspect of their sensemaking by imposing our preordained understandings on their

experience' (p. 17). Also, Nag & Gioia (2012, p. 427) state that 'discerning linkages among the categories that could lead to the development of second-order themes (theoretically distinctive, researcher-induced concepts, formulated at a more abstract level, albeit with an attempt to apply informant labels if those labels represented theoretical concepts)'.

Thus, by employing language used by the informants whenever possible we bring to light indistinct features and concealed behaviours, and categorise them as concepts (first-order categories). Then, by identifying themes (second-order categories) and attributes (aggregation), and by merging the findings with additional narratives collected one year later, we verified that the first analysis was consistent with the post hoc assessment and synthesis. Therefore, the qualitative interviews and in-depth analyses combined with content analysis procedures (concepts, themes and attributes) provide empirically validated results (see *Appendix 8*).
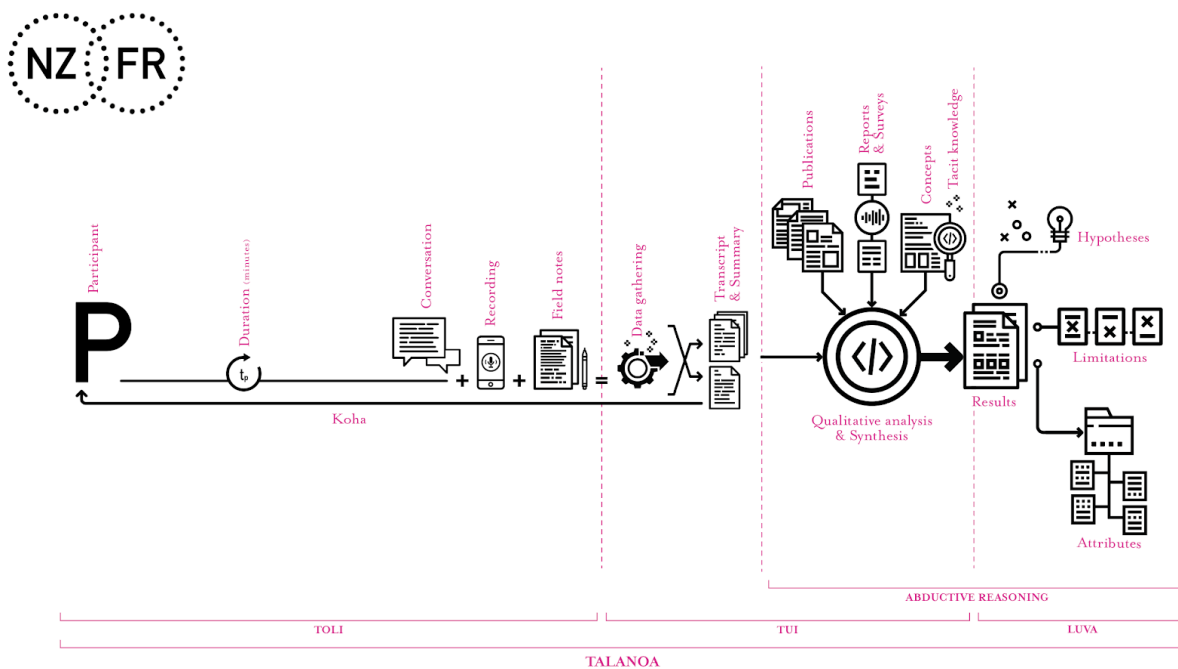
Figure 2.6 Synthesis of Phase 01+02+03 — Talanoa & abductive reasoning.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/3hVjstH]

2.3.4 Phase 04 & 05 – *About Eighteen Months Later* (France & Japan)

In this phase, a comparative interpretation of the phenomenon of mobile technology organisation and collaboration in SME context and practices was undertaken (Figure 2.7). Beyond Weick (1995, 1998), theorists contend that actors enact their environment, which allows them to learn by doing (Orlikowski, 2002). 'Thus, a multitude of research designs are needed that include participant observation, laboratory studies, surveys, biographical analysis, and interviews' (von Krogh & Nonaka, 2009, p. 648).

One could argue that informant accounts via interviews as the main source of data have limitations. However, we made it a point to engage our informants in situ through a workshop series. From these workshops, interactions were exposed, observed, and recorded along with personal feelings and thoughts (in-situ), and experiences, general reflections, and observations (ex-situ). In combination with prior observations, surveys, and questionnaires, these new findings added further insights to the '"thick description" of the data' (Taylor & Søndergaard, 2017, p. 93), enabling more rigour and robustness.
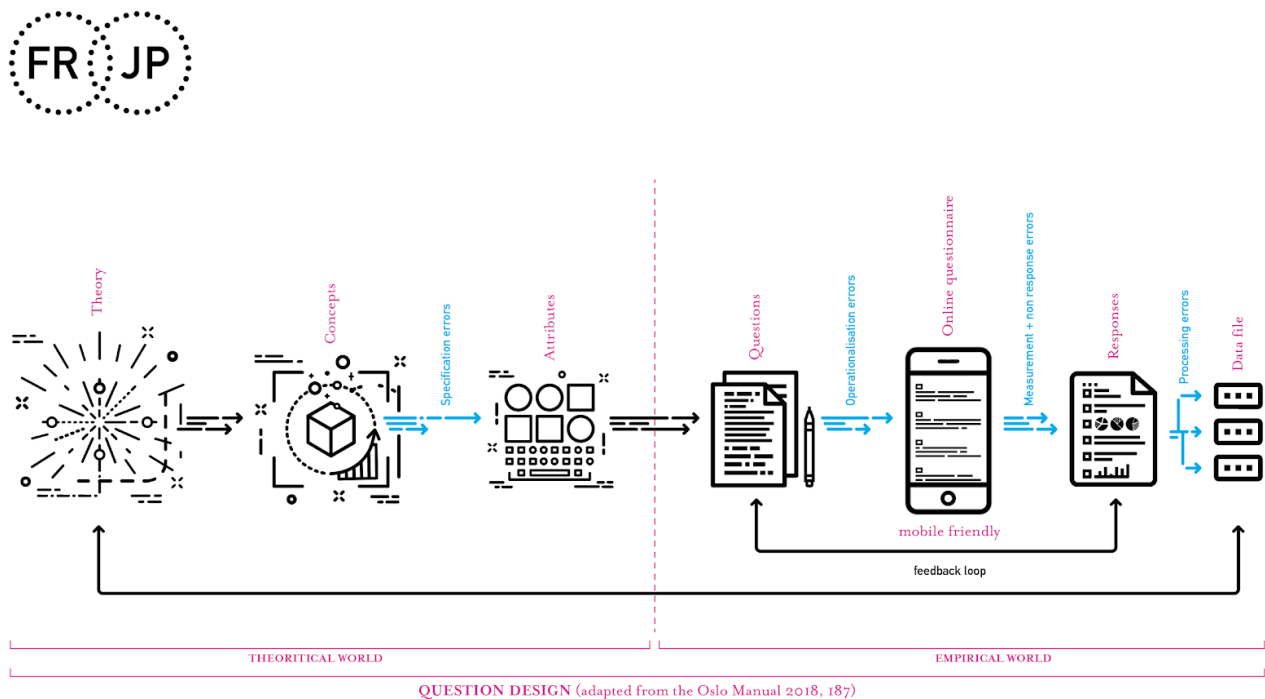
Figure 2.7. Visualisation of Phase 04 & 05 – Question Design – Appendix 9.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/305WZUR]

To ensure empirical sampling represented a broad section of the CIs, we created a narrative built from the observations collected from the use of mobile devices and *slack*. To describe a phenomenon and before building theory, Sanders (1982) recognised the need to include both observations and questionnaires and in this phase, the workshops provided a professional context closely related to managerial and theoretical implications for SMEs. The key findings are highlighted in Figure 2.8 and further developed in *Appendix 3*. The data collection and its synthesis aligns with Carayannis et al. (2013) as 'Entrepreneurs who leverage mobile technologies tend to increase their chances in the generation of additional resources' (p. 470). Despite the encouraging pro tempore results, empirical analysis benefits from qualitative analysis.

CREATIVE WORKERS OUTCOMES
% of respondants (n = 39)
● French   ● Japanese

#03 occasional mobile
26.1   36.7
34.8   14.3
independent hypermobile

#04 sedentary and nomad
47.8   57.1
26.1   0
nomad and teleworker

#05#06 home
54.3   67.8
50   46.4
free access professional areas

#07 office hours
60.9   86.7
47.8   28.6
when necessary

#08 same department only
30.4   57.1
47.8   7.1
across different industries

#09 emails
95.7   100
8.7   0
social media

#10 online document sharing
56.5   100
91.3   85.7
social networks

#11 good
43.5   42.9
13   0
perfect

#12 preparation phase
68.2   71.4
50   64.3
evaluation phase

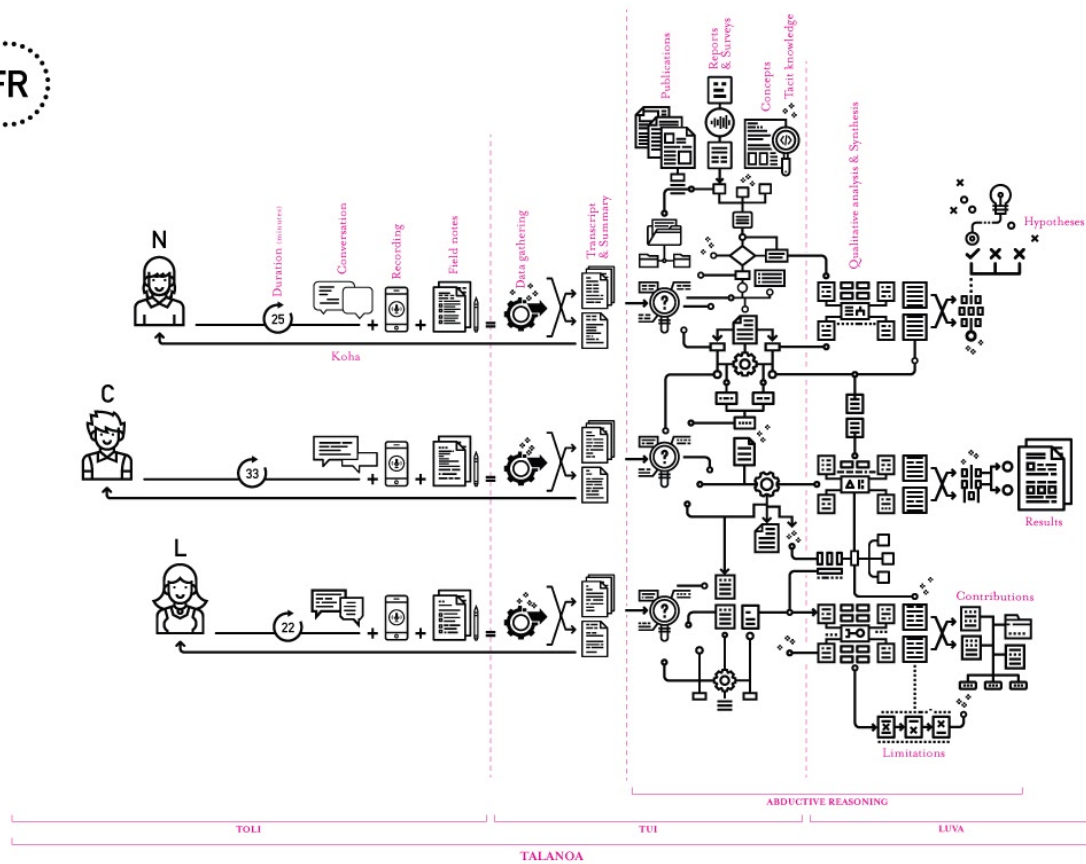*Figure 2.8 Visualisation of Phase 04 & 05 – Key findings.*

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/2ErEvX5]

2.3.5 Phase 06 – *Two Years Later* (France & Japan)

In the final phase we sought to bolster the inferences derived, we applied Scandura & Williams (2000) by testing new frames of reference by bringing them together with existing frames through the application of preliminary and exploratory grounded experiments. In this way, one may witness the possibilities of using some theoretical concepts to determine or refine a research question or model (Alvesson and Sandberg, 2011). We started with a dense description to a fine-grained abstraction (Folger & Turillo, 1999). A workshop was provided to identify technological use, potential applications, and the revealing of new talent. Then a follow up questionnaire with five questions was sent: The first two questions verified participants personal information, and the remaining three sought qualitative data from the participants' post-workshop experience. As Nag & Gioia (2012) explained: 'this approach allowed us to achieve confidence in ascribing trustworthiness to the informants' claims, which was particularly important for information pertaining to specific actions and action patterns' (p. 426).

CHAPTER 3 – Context & Paradigm

> '*When a thing is new, people say: 'It is not true.' Later, when its truth becomes obvious, they say: 'It is not important.' Finally, when its importance cannot be denied, they say: 'Anyway, it is not new'* –William James, 1896.

3.1 Preface

In this section, we define eight critical concepts in relation to this research's context. Then we discuss the findings of our empirical investigation.

3.1.1 Culture

This research focuses on digital transformation and organisational creativity in SMEs in the CIs. While organisational inertia and its routines provide some advantages (Alter, 2010; Cohendet et al., 2014; Glazer, 2017), this research addresses the space where innovation, agility, and improvisation happen (Weick, 1998; Cunha, 2005; Alter, 2010). Alter (2010) states that 'innovative action is therefore the result of the behavior of actors, i.e. groups of individuals with a project independent of that of the institutions that house them (sometimes even antagonistic project) and with both strategic and cultural resources enabling them to carry out this project' (p. 115). Also, March (1991) pointed out that to keep organisations open to *exploration*, it is necessary to complement their orderly and rational functioning (routines, process, methods) with a dose of disorder and poetry, which allows individuals to explore new behaviours for which they do not yet have a rational justification and without being called to order immediately. Opposing March's position, Burger-Helmchen et al. (2016), claims that 'it explains why the company will naturally gradually favour the speed, clarity and proximity of the benefits of exploitation over the more diffuse and distant effects of exploration' (p.218).

However, while from a broad perspective our culture values poiesis and techne more than praxis, we pay more attention to praxis via the observation and recording of enactment (Orlikowski, 2002) during empirical and exploratory steps. In this research, we observed that creative activities require a reflexive time, a floating moment, which could be compared to slack time by management. On that point, March (1991) even observed that slack time can be that of an individual escaping the formal control of an organisation, of the hierarchy. For example, many of our informants shared that the connectivity and availability of mobile technology allow them

to work during commute or from various locations, breaking with the routine of their working environment.

In summary, in order to embody their creativity, fluidity and flexibility in the working context are very important for a CI practitioner (Throsby, 2001). In a world where speed and collaboration are essential, mobile technology offers a source of strength near at hand, a view that is developed in *CHAPTER 4, 5* and *6*.

3.1.2 Creativity

Derived from Amabile (1983, 1988), Woodman et al. (1993), Van de Ven (1999), and Slavich & Svejenova (2016), Figure 3.1 presents a formulation of the relationship between the states and stages of an idea to innovation.

[INDIVIDUAL]   [GROUP] [ORGANISATION]

new + useful IDEA ┊ CREATIVITY + value and/or market ┊ INNOVATION

Figure 3.1 Visualisation of the continuum 'idea-creativity-innovation'.

Rogers (1954) determined that 'there is a desperate social need for the creative behaviour of creative individuals' (p. 249) and the creative process is 'the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other' (p. 251). Important to this research is the conception that 'a creative act is the natural behaviour of an organism which has a tendency to arise when that organism is open to all of its inner and outer experiencing, and when it is free to try out in flexible fashion all manner of relationship' (p. 255) and echoes March's (1991) probe into *exploration* and *exploitation*.

Amabile et al. (1996) defined two kinds of feature associated with the work environment that corresponds with creativity, which include stimulations (*organizational encouragement*, *supervisory encouragement*, *work group support*, *sufficient resources*, *challenging work*, and *freedom*) and obstacles (*organizational impediments* and *workload pressure*). The two factors affect creativity and are managerial practice.

> *'This process yielded eight environment scales, six assessing proposed stimulants to creativity (dimensions that should lead to higher creativity) and two assessing proposed obstacles (dimensions that should lead to lower creativity)'* (p. 1165).

An important contribution of Amabile et al (1996) to the field of management is that the perception of the work environment has a major influence on the level of creativity in organisations. This viewpoint has guided our research.

> 'scholars of innovation must seriously consider characteristics of the organizational context that can impede or support the generation of those ideas' (p. 1178)

In the context of this research, through the examination of mobile technology and its online framework and its digital space, we challenge notions of organisational context, for example in her seminal article *How to kill creativity* (1998), Amabile says:

> 'creativity is undermined unintentionally every day in work environments that were established –for entirely good reasons– to maximize business imperatives such as coordination, productivity, and control' (p. 77).

Amabile (1998) identified three characteristics of creativity as expertise, creative-thinking skills, and motivation (Figure 3.2). The characteristics can be supported by teamwork and information sharing.
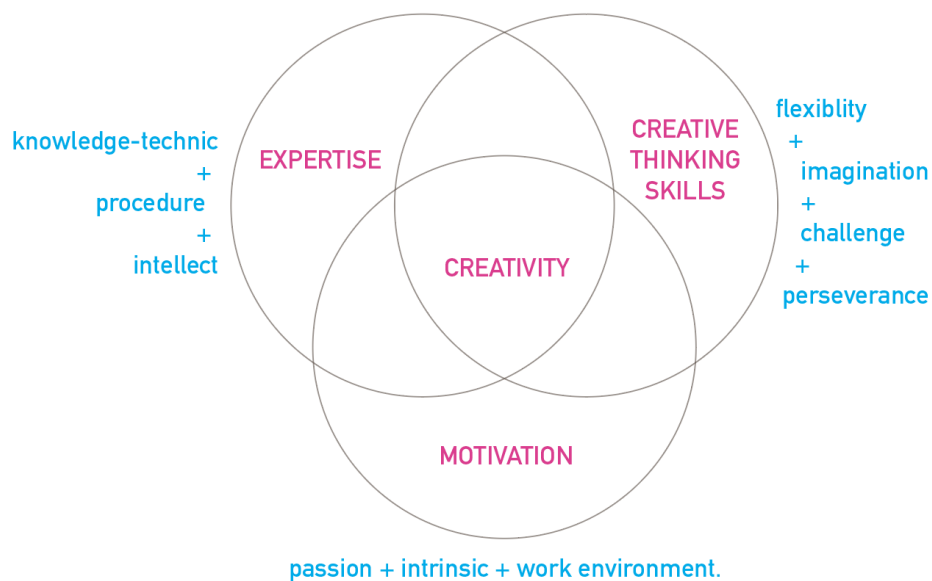
Figure 3.2 Three components of creativity (adapted from Amabile, 1998, p. 78).

Creativity and its characteristics are partially in line with our primary concerns about mobile technologies, that they can enhance collaboration and information sharing, foster social capital and grow cultural knowledge (Levallet & Chan, 2019, p. 182). Creativity is stimulated and enabled in organisations if team functioning, communication, and work environment are well-formed, established, and supported by managers. The way managers develop and collaborate with workers and teams can transform the creative context. Moreover, digital transformation can play a role across levels, albeit borderless and timeless, as a means to support exchanges between people and companies.

Amabile (1997) highlighted eight motivational attributes in her *Componential Theory of Creativity* (1997). They are: (1) *that managers' education and awareness have an impact on motivation in productivity and creativity*, (2) *the effect of intrinsic and extrinsic factors on workers' surroundings* (revised in Van damme et al., 2019), (3) *the alignment between people skills and tasks to enable strong intrinsic motivation* (what Amin & Cohendet (2004) defined as hidden architecture), (4) *a clear organisational willingness to enable*, (5) *to measure and take action to innovate*, (6) *provide psychological support for risk-taking attitudes* (authenticity vs politics), (7) *provide for eclectic profiles in autonomous teams*, and (8) *provide appropriate resources when exploring new avenues* (what Cohendet et al. (2010) defined as creative slack). Additionally, Cohendet & al. (2010) said that a 'soft architecture of knowledge' within a knowledge-intensive environment that fosters knowledge dynamics and interactions between individuals and organisations, and between amateurs and experts, is needed for creative businesses.

Thus, the dynamics between innovation and creativity can be considered as a *middle-ground* between the formal routine-process-hierarchy-based organisation and 'the informal local communities' (Cohendet & al., 2018, p. 1057) of individuals that implies improvisation and autonomy.
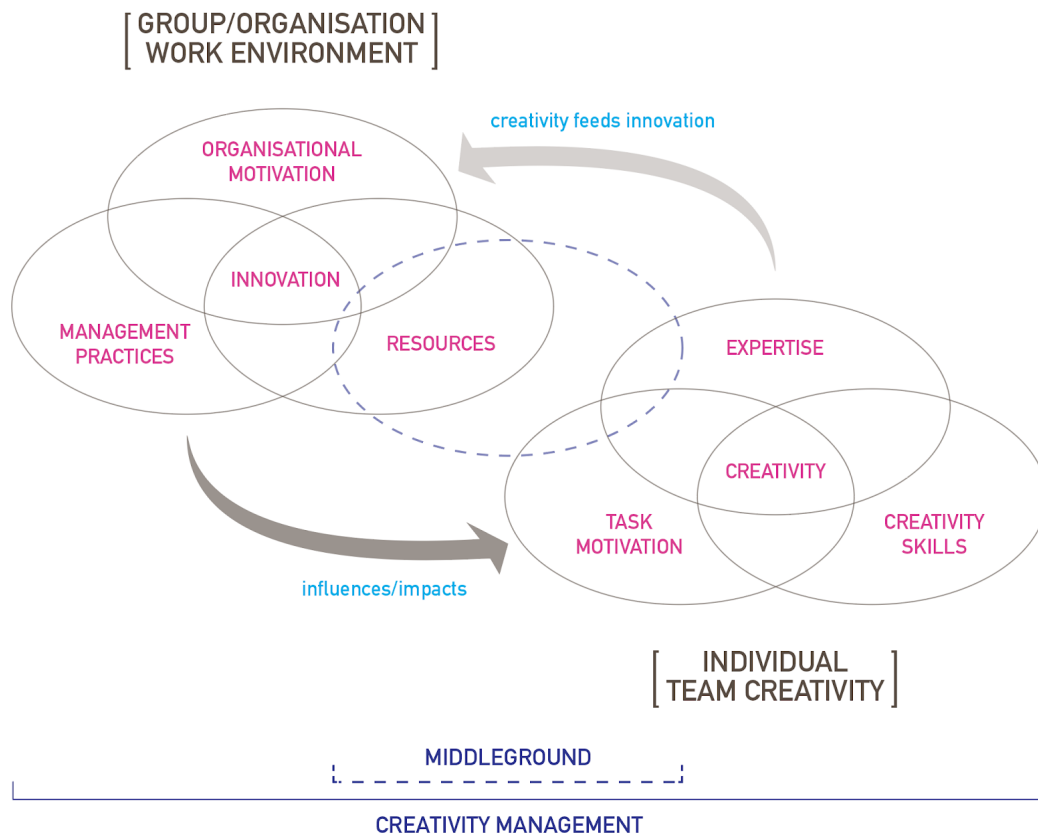
Figure 3.3. Creativity Management (adapted from Amabile, 1997, p. 53; Cohendet et al., 2010, 2018; Parmentier et al., 2017).

Figure 3.3 presents the perspectives on creativity management described above and the notion of an ecosystem built on cycles of feeding and influence. The figure illustrates the constant flow of leadership or influences and the influenced or those led, between static organisational routines as innovation and dynamic individual craft as creation. Within the continuum of creativity management, there is a state of discomposure that corresponds to the *middle-ground*, and a 'tension between exploration and exploitation' (Cohendet et al., 2010), between tacit and explicit knowledge.

In organisations and firms, Amabile (1997) stated that innovation is critical for long-term success and that 'creativity is the first step in innovation, which is the successful implementation of those novel, appropriate ideas' (p. 40). However, with the steady advancement of technology, we need further consideration about technological impacts on work practice, interactions, and management. To address this, taking Burkhardt & Lubart's (2010) combination of creativity and psychology with technology and ergonomy, this study focuses on mobile technology (see *CHAPTER 4, 5* and *6*).

69

3.1.3 Management

The origination of the swift development of *Open Innovation* practices has come from the democratisation of electronic communication networks via the Internet and mobile devices (Chesbrough, 2004; Chesbrough et al., 2018). Indeed, through this pervasive technology, it is now possible to contact myriad consumers, collaborators, experts, virtual communities, and worlds. This constitutes a pool of ideas and creative capacities for companies eager to absorb external knowledge (Burger-Helmchen et al., 2016, citing Liotard, 2012, p. 307). While our approach involves an open innovation mindset, our attention is on co-creation, which we define as being at the intersection of collaboration, creation, and value creation (von Hippel, 2013; Neghina et al., 2015; Nikolić & Natek, 2018). Jenkins & Deuze (2006) term this as being a *prosumer*, a neologism combining producer (collaboration/creation) and consumer, or technology user (von Hippel, 2013; collaboration/value creation). We also reference Leonard's (1995) work on creativity within groups, which shows that the diversity of individuals allows for the emergence of creative solutions located at the boundary of group members' disciplines and specialisations. The notion of open innovation is discussed in Section *3.1.4* and relates to Leonard's (1995) argument that many companies tend to ignore or fail to remember that knowledge resides in people and human relationships. It is crucial for SMEs to create porous frontiers with the outside world by cultivating a mindset of openness. For example, smartphone attributes such as ubiquity, pervasiveness, and affordance become key for SMEs and their competitiveness and recognition of the concept of co-creation through mobile social media interactions and engagement (see *CHAPTER 4, 5* and *6*).

3.1.4 Collaboration

In Section *3.1.2*, Amabile (1996) identified three environmental drivers that influence creativity, management practices, resources, and organisational motivation. A team should be composed of individuals with their own perspectives and profiles, autonomous, and have freedom of action. Callon (1999) & Latour (2005, 2015) extended this perspective on collaboration and networking between individuals or actors, with the idea that collective outcomes depend on the quality of interactions (rules, negotiation). The use of mobile devices can improve teamwork by reducing communication delays and arbitration, or at least mitigating time-wasting (Boutang, 1993).

Furthermore, Nonaka & Takeuchi (1995) introduced the concept of *ba* as a place of knowledge creation through which worldviews are shared. The creation of knowledge depends on interactions that start with face-to-face encounters but computer-mediated communication (Fruchter, 2001) and rich-media

communication (Bathelth & Turi, 2011) indicate that *ba* no longer requires in-situ interaction (see *CHAPTER 4* for discussion on *ba* in relation to mobile technology).

3.1.5 Community of Practice

Lave & Wenger (1991) defined a community of practice as people who share a concern or a passion for something they do and as they interact regularly, they learn how to do it better. Brown & Duguid (1991) described the informal dimension of a community of practice and its emerging character as an unstable, emergent, and unfixed structure where learning can take place on a peer-to-peer, collaborative basis. They asserted that internally developed knowledge contributes to the business culture of the organisation and is unlikely to be shared outside its perimeter, and departments also. Wenger (1998) addressed the concept of an informal learning group or cluster within an organisation and defined that a learning process requires a series of socialisation and identity creation actions, merging profiles of individuals related to a company and not doing the same work.

To foster knowledge creation and value for SMEs, this research asks the question; how can mobile technology facilitate socialisation and information exchange? To progress in our examination, we take into consideration five knowledge enablers (von Krogh et al., 2000): '(1) instil a knowledge vision, (2) manage conversations, (3) mobilize knowledge activists, (4) create the right context, and (5) globalize local knowledge' (p. 5). Burger-Helmchen et al. (2016) described von Krogh as a boundary spanner and in the same way, to advance knowledge of organisational creativity, and collaborative and innovative practices outside the boundaries of the organisation, through the lens of capability and characteristics of mobile technology, this research bridges various fields of interest.

Thus, in *CHAPTERS 4*, *5*, and *6* we address another important idea related to the notion of communities of practice and social learning theory (Lave & Wenger, 1991), the *Legitimate Peripheral Participation* (LPP). Looking at the creative process, Ally, Guegan et al. (2017) explored the potential of a virtual *Creativity-Conducive Environment* (CCE) and observed that participants in CCE produced more original ideas and explored idea categories in greater depth than otherwise. Therefore, this research defines the role of mobile technology in online collaboration, beyond the boundaries of spatio-temporal limitations. Furthermore, the research probes what Wenger (1998) termed aliveness, the typical feature that makes a community of practice real to its members.

3.1.6 Co-Creation (Proximity)

Leonard & Swap (2000, 2005) studied cases of the acquisition and sharing of expert knowledge within their communities of practice in mature organisations. This can provide a basis for the informal coaching of novices in SMEs, supported by Dampérat et al., (2019) who stated that 'co-creativity differs from individual creativity by the fact that it takes place in a team and is part of a logic of collaborative innovation' (p. 2). However, geographical, cognitive, organisational, social, and institutional proximity influence network formation and dynamics (Boshma, 2005) and despite the development of ICT, geography affects innovation and local development. Nonaka & Takeuchi (1995) emphasised that socialisation occurs during face-to-face interactions and Boshma (2005) reinforces the argument that proximity dynamics is a factor in the physical interactions of collaborators. Furthermore, Burger-Helmchen et al. (2016) add support to Boschma (2005) through management science and the existence of coherent diversification processes in line with Penrose's (1959) work. According to Burger-Helmchen et al. (2016), 'cognitive proximity corresponds to the degree of closeness or overlap between the basic knowledge of two companies. Given the tacit, idiosyncratic and cumulative nature of knowledge, the greater the cognitive proximity, the greater the external and stronger the capacity for knowledge absorption and possible innovation (Nooteboom, 2000)' (p. 186). We will particularly explore this angle in *CHAPTER 6*.

3.1.7 Digital and Mobile Technology

Leonardi & Barley (2008) defined that information technology and organisational work are situated on the cusp of the material and social frames. In relation to this research, the attributes of mobile technology 'provide people with the ability to do old things in new ways and to do things they could not do before.' (p. 161). The application and financial affordances provided by mobile technologies enable people to work in new ways. Consequently, organisational and behavioural work is evolving with new positions, roles, and tasks, which impact interactions, relationships, and networks. Leonardi & Barley (2008) describe the bi-directional influence between technology (material) and social (people) but in ICT or IS research, the focus is commonly on social interaction rather than material properties. Vial (2013) took this point one step further by determining that there is an intrinsic technicality underlying the process of research and knowledge production, that there is an ontophany of knowledge in which there exists 'a phenomeno-technical phenomenon of the activity of knowledge production' (p. 221). As a new model of thinking, the creation of a

new creative paradigm, we should consider the digital humanities from the perspective of experience rather than considering mobile devices as mere tools. This view is supported in Section *3.1.6*, in which the concept of co-creation is defined (von Hippel, 2013) and users are not only the consumer of technology or service but also its developer, designer, and producer.

Therefore, there is an ontophany of knowledge, that is, 'a phenomeno-technical phenomenon of the activity of knowledge production' (p. 221). Said differently, beyond considering mobile devices as simple tools, we should consider the digital humanities from the perspective of experiences, which entails a new model of thinking, and the creation of a new creative paradigm. To a certain extent, it supplements the previous *3.1.6 Co-Creation* section, which defined the concept of co-creation (von Hippel, 2013): when users are not only the recipient of a technology or a service but also its developer, its designer, its producer.

Additionally, Leonardi & Barley (2008) refer to Papert (1991) where the differentiation between social constructivism and social constructionism is relevant:

> *'The word with the v [constructivism] expresses the theory that knowledge is built by the learner, not supplied by the teacher. The word with the n [constructionism] expresses the further idea that this happens felicitously when the learner is engaged in the construction of something external or at least shareable... a sand castle, a machine, a computer program, a book'* (p. 168).

Thus, constructivism (subjectivity) relates to a specific worldview and an ontological approach, while constructionism (intersubjective) refers to a broader and collective understanding of the world through a phenomenological way (see *CHAPTER 2*). In terms of organisational creativity, constructivism includes eclectic and improvised situations and merges those with common practices and understandings within a group (CoP, CoI), while constructionism implies that there exists a shared development and exchange of knowledge, a common and explicit playground. Therefore, by means of its capacity and capabilities, mobile technology fosters the interweaving of human and material agencies (Leonardi, 2013) and this research examines the potential and limitations to the view that 'social media is for internal communication and social interaction within the enterprise' (Leonardi et al., 2013, p. 2). To foster innovative practices via knowledge sharing interactions on social media (Leornardi, 2014), individuals from a wide variety of occupations and organisations routinely interact with people and information technologies (Burger-Helmchen et al., 2016, citing Leonardi). *CHAPTER 5* discusses this perspective.

3.1.8 Innovation

> *'Open Innovation is to open up the innovation process to all active players so that knowledge can circulate more freely and be transformed into products and services that create new markets, fostering a stronger culture of entrepreneurship'* (Directorate-General for Research and Innovation (European Commission), 2016, p. 11).

Further to Section *3.1.3*, the concept of *Open Innovation* is steadily evolving from continuous, bilateral collaborative exchanges to compelling, networked, pluri-collaborative innovation ecosystems (Figure 3.4).
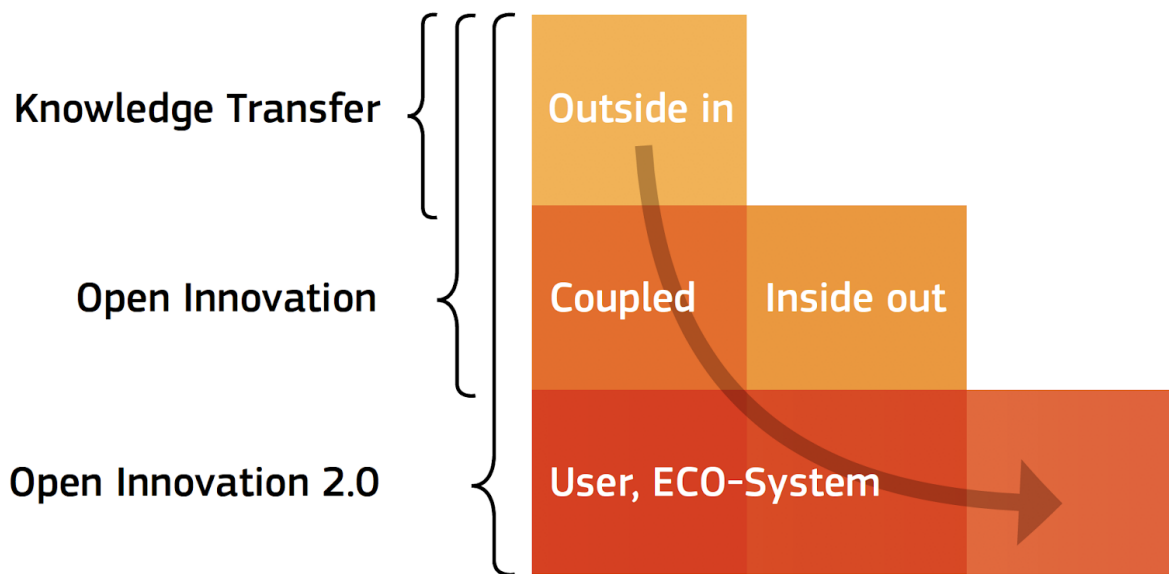
Figure 3.4 Evolution of Open Innovation. Source: DG Research and Innovation, Knowledge Transfer and Open Innovation Study (on-going)

Van Damme et al. (2017) said the difference between creativity and the innovation process is that successful idea generation in innovation usually depends on the quality of the best opportunity identified. They extended Amabile's *Componential Theory of Creativity* by looking at social motivation and its implicit qualities such as information sharing, filtering, and transference. In the case of prosocial motivation, information exchange is stimulated and fluid. They emphasised that rather than only interactiing at the beginning of the process, constructive discussion with relevant team workers and collaborators provides more innovative outcomes. In our case, connected people are important but the quality and in-depth interactions via an *Open Innovation* framework and mindset (trustworthiness) are also important.

Lansmann & Klein (2018) argued that, due to the new digital paradigm, management needs to take the transformation of work standards into consideration. For example, to better support organisational growth and performance, the type of work and tasks at hand. They discovered that 'increasing IT use initially yields productivity gains, however, beyond a certain intensity of IT use, gains turn into losses. We conjecture a similar relationship between the intensity of collaborative activities and the resulting impact on productivity and, more broadly, well-being.' (p. 3). Too much interaction can generate organisational drag, which represents futile or irrelevant communication and teamwork. To counter this, managers should pay more attention to the dichotomy of the demand and supply of collaborative resources, represented by workers as time and energy.

In *CHAPTER 4* and *5*, we discuss the constraints and limitations of mobile devices in innovative and collaborative working environments (Cavazotte et al., 2014; Obushenkova et al., 2017). Achieving balance and increase of awareness for organisational management of KI workplaces and especially SMEs, because networking and teamwork are the essences of innovative businesses. The Schumpeterian definition of innovation (an economic and social process, 1934) is presented in *CHAPTER 4, 5, 6*. While Schumpeter stated that a technical process is often the result of an invention, we argue that innovation can also be the outcome of a technical process (see Section *3.1.7*). Furthermore, this investigation aligns with Van de Ven's (1999) seminal definition of innovation:

> '*Innovation is an ambiguous and uncertain process, and it is often impossible to know which path may yield fruit unless plausible alternatives are explored*' (p. 35)

> '*By definition, an innovation is a leap into the unknown. If an innovation is to have a chance to succeed, traditional notions of managerial control may need to be relaxed somewhat*' (p. 66)

Van de Ven (1999) pointed out the importance of interactions (inside and outside the company), in particular the hidden face (informal relationships) which implies two levels in time management: the local (short-term: interacting, networking and acting) and the global (long-term: creating, testing, innovating). In line with this conception, we will further elaborate and characterise some benefits and limitations of mobile technology in *CHAPTER 4* and *5*.

3.2 Introduction

'Whether a computer will contribute to the solution of an information-overload problem, or instead compound it, depends on the distribution of its own attention among four classes of activities: listening, storing, thinking, and speaking' (Simon, 1971, p. 42)

The digital world today could be summarised as having constant solicitations, multiple activity possibilities, and expectations to perform multiple tasks simultaneously. Through digital convergence, we are now a permanent transmitter and receiver of information (Cohendet, 2014; Ferraris, 2016), perpetuating the flow of information (Barrico, 2014) and creating or modifying information as prosumers (Jenkins et al., 2013; von Hippel, 2013). Our mobile devices are the interface of our professional or personal life through our conversations (emails, SMS, texts, still images, video) (Isaacs, 1993). As a result, technological and digital productivity change how business value is generated through having the ability to access and embrace information and ideas from anyone, anywhere, exponentially. For example, empowered by digital platforms, ecosystems and mobile affordances, more people are choosing to work as self-employed or create their own companies, rather than seeking traditional corporate employment (Bhalla et al., 2017). Indeed, the field of design is experiencing a growth of entrepreneurship characterised by the blooming numbers of freelancers or start-ups (Nesta, 2018).

Moreover, through the growth of smartphones, tablets and phablets, and associated products, we are witnessing a movement and transformation of the use and sharing of knowledge (Nonaka et al., 2000; Amin & Cohendet, 2004) and collaboration (Caniëls, 2016; Slavich & Svejenova, 2016). For example, in France mobile development is particularly visible in a report, "Le baromètre du numérique" (CRÉDOC, 2018), which indicates that 94% of respondents to their survey own a smartphone. Corresponding to this, the role of technology as mediator and facilitator in communication and collaboration between team members supports interactions over time and space (Fruchter, 2001). Therefore, digital creativity no longer has a specific territory or time constraint, it exists in a spatio-temporal continuum.

Current digital development in mobile technology (Ahonen, 2010) sees new players emerging, intermediation platforms, and new human behaviours (Anders, 2016; Teece, 2018). Mobile devices have a direct impact on the lives of their users via mobile social networks via apps such as *Facebook*, *Instagram*, *Pinterest*, *Twitter*, *Slack*, *YouTube*, and *WhatsApp*, supporting the *Theory of Creativity* developed by Rogers (1954). The theory defines a creative act as a consequence of an inner and outer experience of a subject who feels discharged from any

constraints or limitations. Also, Nova (2018) discussed how mobile technology became a human prosthetic to enhance the flow of knowledge, information, and exchanges amongst users, whereas Igigabel & Thouan (2018) describe smartphone as a 'universal tool that can be used to perform almost as many actions as Dr. Who's sonic screwdriver', what Nova (2018) calls a protean object. Furthermore, Evans (2016) defines mobile as the new scale and the first universal tech product.

Mobile technology can play an increasing role as a catalyst for creativity (Fruchter & Medlock, 2015; Allard et al., 2014) or as an active agent of innovative capacity and capability (Burbank, 2014; Llerena 2016; Nielsen, 2018). Through the key characteristics of personalisation, permanently connected, and immediacy (Ahonen, 2011), mobile technology acts as a bridge between rupture and continuity in the creative process. According to Ahonen, mobile offers a digital interface to the real world, so this research examines the role of mobile technology in relation to the theory and practice of management in CIs. To better understand and define mobile technology theory and practice in creativity, we first contextualise the notion of mobile technology as a creative 'actor' and how mobile technology can provide a flow of ideas between people. Then, we determine the degree that which mobile technology supports ongoing creativity. Next, based on the eight concepts (see Section *3.1*), we highlight how mobile technology can be a playful intercessor between people and processes to nurture creativity, sometimes even becoming an active agent for innovative capacity and capability

3.3 A Creative Flux

In view of the *Fourth Industrial Revolution* and according to Fruchter & Medlock (2015), we are experiencing a new way of working which involves 'globalization, collaboration, mobility, digital media, interactive devices, distributed and multi-location work, and convergence of physical, virtual, and social spaces and places' (p. 477). Mobile devices are making it easier to exchange, share, and create, that represent an 'ARMI', an *Apparatus for Registering and Mobilizing Intentionality* (translated from French to English) (Ferraris, 2016). Although we agree that this kind of constant connectivity could bring negative aspects like superficiality and misunderstanding (Majchrzak et al., 2013), hyperconnectivity (Vial, 2013), and a blurring of the line between professional and private lives (Antonczak et al., 2016), in this investigation we focus on the benefits of mobile technology (Ahonen, 2011) and the concept of how connectivity is changing the way we experience a world in constant flux. Therefore, we argue that mobile devices allow the flow of knowledge, information, and exchange. Furthermore, in arguing for a move towards global simultaneity, interconnectedness, externalisation (Serres, 2012), and digital energy flows (Barrico, 2013), we have shown that mobile technology catalyses energies and

consolidates interdependencies. Thus mobile technology allows users to be more agile, act faster, adapt in real-time, being responsive and fluid during interactions across a range of distributed environments, and it facilitates a porosity of knowledge, greater reactivity while enabling better decision-making or improvisation on the go (Moyer, 2016; Duymedjian et al., 2016).

In relation to fostering creativity via mobile technology, we endorse Ferraris (2016) who defines the advantages of the Internet and the 'ARMI', the mobile devices; 'For the first time humanity has access to an infinite book, film and music's library' (p. 115). Such that the memory in mobile devices makes it possible to collect, record, consider, and retrieve ideas, impressions, thoughts, facts, feelings, and more. Additionally, based on a wide study of literature in the field of Information Systems research, Cecez-Kecmanovic et al. (2014) stated that humans and technology have inherent properties. Building on Carter's (2015) definition of IT, 'a unit of technology (hardware device, a software application, or software application environment) that an individual consciously engages with, as an end-user, to produce, store, and communicate information; that could be accessible to that person across time and space; and that may provide breadth of access to others in the person's social world' (p. 932) we add Maslow's consideration that once human beings have their physiological needs and safety assured, they need above all social connections and personal fulfilment. Therefore, the spontaneity and creativity that we observe in ourselves, the fact of possessing mental content, and ideas, and referring to something in the world, are not performances that contradict in any way the notion that the origin of everything must be sought in recordings and inscriptions (Ferraris, 2016), then shared via mobile devices through texts, drawings, sketches, images, animations, videos, video chat or live event, for instance.

Extending Section *3.1.2 Creativity*, Slavich & Svejenova (2016) define creativity as 'a concept marked by ambiguities (Runco, 2008), that depends on and is influenced by personal characteristics, interpersonal processes, social interactions, novel combinations of different perspectives, and information sharing (Perry-Smith & Shalley, 2003; Woodman et al., 1993)' (p. 238). Thus, since mobile technology enables complex interaction and can stimulate network formation even without frequent face-to-face contact, we claim that the affordance and ubiquity of mobile technology enhance a reduction of the gap between rupture and continuity in the creative process. Gibson (1986) defines affordance as being 'both physical and psychical, yet neither' (p. 129), specifically with what Ahonen (2011) called the digital interface (to the real world) made possible with shape-changing interfaces that Sturdee & Alexander (2018) describe as 'physically tangible, interactive devices, surfaces, or spaces that allow for rich, organic, and novel experiences with computational devices' (p.1).

To summarise, by means of its capacity and capabilities, mobile technology fosters the interweaving of human and material agencies (Leonardi, 2011). Mobile phone use becomes more and more embedded in mundane activities, which leads users to have feelings of autonomy, empowerment, and self-authenticity (Carter et al. 2012), and subsequently with a higher potential for ideation, creativity (Woodman et al., 1993) and *creative slack* (Cohendet et al., 2010).

3.4 A Creative Move

In the previous section, we said that mobile technology allows a creative continuum and that these enhancements allow for the cross-pollination of ideas and offer huge opportunities (Nikolić, 2018). In this section, we discuss how mobile devices afford a new form of creative openness and autonomy between people. Starting with the findings of Rogers (1954), 'a desperate social need for the creative behaviour of creative individuals' (p. 249), which today can be brought sharply into focus when considering that humans and objects exist only through relations and that they are given execution by their relationships (Callon, 1999; Latour 2005; Orlikowski 2010). Also, Shirky (2011) explains that people have been learning to use their free time to create rather than consume since the 1940s, especially since the advent of digital tools that allow new ways of collaborating. In addition, within our digital society context (4G, smartphone affordance) we are witnessing a resurgence of the concept of *Imagineering*, a term coined by the Aluminium Company of America (Alcoa) Corporation (1942) and defined as the implementation of creative ideas in practical form, reflects a convergence of prosumer desires, technical capabilities, and organisational innovation. Prosumers are defined as consumers or actors and producers of a product or service in a participatory innovative system (von Hippel, 2012). Furthermore, co-creation is defined as an active, original, inventive, and collaborative procedure between an agency and individuals within the advancement of a product and service, and in which shareholders are devoted to a specific function initiated and facilitated by the agency (Roser et al., 2009). This definition is interesting because it emerged at the same time as the *semantic web* (Web 3.0), which roughly coincides with the launch of 4G in mobile technology and ontologically, the definition sits within the established technical tradition of the time. Yet current mobile technology allows individuals to connect to each other across multiple fields of expertise and social attachments, and with objects (IoT −*Internet of Things*). Also, due to the mobility and geographical distribution of team members (Fruchter & Medlock, 2015, p. 478), it is important to realise that companies are facing a challenge in which knowledge, ideas, and feelings are more commonplace in collaborative situations (see *CHAPTER 4* for more detail about the importance of this point).

From a phenomenological perspective, increasing mobility (D'Mello & Sahay, 2007) encourages more mobile technology, a transition to home-based work (Brocklehurst, 2001), and changing practices in organisations (Alvarez 2008). Also, Marzloff (2013) argued that to be more efficient, the 21st Century worker must be agile and that mobile technology like smartphones is the main component of the *nomadic worker's toolkit* (p. 48). Equipped with their mobile devices, each person feels empowered by 'ATAWAD' (Any Time, Any Where, Any Device) or *mobiquity*[5]. This mobiquity and its sense of freedom that is associated with openness can generate an impetus locus (Chesbrough et al., 2014), which in turn encourages mutualism, a co-creation of knowledge exchanges, that creates dynamic cooperation through flow exchanges, which leads us to a system of prosumers. As an example, according to the *Work IT Easy 2.0* survey (2012), 54% of workers report using a shared agenda, which means that mobile technology allows agendas to synchronise. However, the affordance and pervasive attributes of mobile technology make it easier to access information by both external and internal actors. In this case, we argue that mobile technology enhances creative slack, which is the accumulation of unused or neglected resources produced during the ideation, creation, production, and diffusion phases of a product or service (Cohendet & Simon, 2008, p. 7).

From an ontological perspective, the concept of *ba* defines a new spatio-temporal space where knowledge emerges from exchanges between tacit and explicit knowledge (Nonaka and Takeuchi, 1995). In the next chapter, we will highlight how mobile technology provides a new *ba*, a new way to facilitate the interplay of types of knowledge to foster creative outcomes through digital exchanges and interactions (Antonczak, 2019). Our argument incorporates Amin & Cohendet's work (2004) on performativity, which describes creativity as 'the product of enactment, engagement, and improvisation' (p. 9). That while motivations and incentives could be blurred, people share their knowledge and experiences in effusive and creative ways that foster new approaches to problems. Alternatively, from an interactionist perspective, Woodman et al. (1993) said that 'the organizational creative process is composed of both salient behaviours and creative situations' (p. 310), such that creativity is the sum of creative behaviour, influenced by its context (social and environmental). In this sense, Vial (2013) said that there is an intrinsic technicality underlying the process of research and knowledge production, that there is an ontophany of knowledge, that is, 'a phenomeno-technical phenomenon of the activity of knowledge production'. The ontophanic model in the current digital revolution led by mobile

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[5] 'Mobiquity is a word proposed at the beginning of the Internet relating to the mobile phone in the 1990s by Xavier Dalloz', retrieved from Antonczak L., Papetti C. (2017). Towards a Mobile Enhancement of Glocal Heritage? Developing user experiences in relation to mobile technologies, geo-localisation and culture. In ThinkMind, Proceedings of The Thirteenth International Conference on Wireless and Mobile Communications 2017, (pp. 82-86). International Academy, Research and Industry Association (IARIA) –ISBN: 978-1-61208-572-2

technology, in conjunction with Barrico (2013) and Ferraris (2016), is not only a technical event but a major philosophical event that changes our perceptual structures and reconfigures our sense of reality. Therefore, beyond considering mobile devices as a simple tool, we should consider the digital humanities from the perspective of experiences, which entails a new model of thinking and the emergence of a new creative paradigm. Vial talks about digital ontophany being more than a phenomenon but that it also involves creative phenomenology that results from a manufacturing process (p. 250).

In summary, mobile technology is the catalyst for a new way of thinking, working, communicating, and creating. Mobile technology enables organisational slack (Parmentier et al., 2017) through its multiplicity of access modes and nomadic character, where mobile devices allow individual empowerment, collective creativity, and the participation of all. Creativity through smartphones is enabled by intensive interaction and the joint observation and operation of material artefacts (Bathelt, 2011).

3.5 Conclusion

In this chapter, findings from various sources on creativity and design, sociology, philosophy, and management, contribute to a deeper, more differentiated, understanding of creativity. In this way, we expressed a trans-disciplinary viewpoint on design processes with mobile technology. We argue that through enhanced creativity and productivity, mobile technology fosters a new fluidic (Bauman, 2007) and informational (Musso, 2003) space-time that fosters kinetic capitalism (Gras, 2013).

Mobile technology contributes to an update of the *Theory of Creativity* (Rogers, 1954). A critical analysis of literature provides that mobile technology not only contributes to the education and formation (*Bildung*[6]) of all, but also can be considered as a playful interface between creative slack and organisational slack, the intercessor of a proactive and dynamic flexible way to ideate, create, and innovate, increasing the reflective capacities of each person as well as the potential for interaction between all. Thus, it is of interest to explore in detail the potential of mobile technology in productivity and a possible *Hono[7] œconomicus*, in relation to the *Homo œconomicus* (Pareto, 1906; Becker, 1973).

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[6] Bildung 'emphasizes a process of holistic growth, self-realization of the individual as an entirety, freedom, and self-understanding as well as a sense of social responsibility, and which puts the development of the individual's unique potential and self at the center of educational processes'. Hu, A. (2015). The idea of Bildung in the current educational discourse: A response to Irene Heidt. *L2 Journal, 7*(4), 17-19.

[7] Māori word, which encapsulates several meanings such as to connect, to link, to join; and which is used as an equivalent of "smartphone" by the rangatahi, the younger generation.

CHAPTER 4 – A Mobile Space for Collaborative and Innovative Practices

'*We teach people that everything that matters happens between your ears, when in fact it actually happens between people*' –Alex Paul "Sandy" Pentland, Stanford University & MIT, interview with *Computing*, 2013.

4.1 Preface

Presently, there is a broad consensus that innovation will increasingly be achieved through collaboration with actors who are, and that the sources of innovation are in part, outside the traditional boundaries of the company (Demil & Lecocq, 2012). Furthermore, nearly 90% of tech-based start-ups surveyed by *McKinsey Global Institute* (MGI, 2016) report that the enterprise extends beyond national borders. Consequently, 'as the knowledge-base of society expands and progressively becomes more complex, traditional hierarchical structures face difficulties in integrating and consolidating dispersed parcels of knowledge' (Cohendet et al., 2010, p. 146). Another significant characteristic of current market trends is that SMEs or start-ups have a more important role to play than multinational companies. Digitalisation in international groups demonstrated, especially during the Covid-19 crisis when travel and face-to-face meetings were restricted, that they can pilot virtual teams across space and time, almost seamlessly. However, the main challenge for both sides of the spectrum (SMEs and multinationals) lies in their ability to reconsider their organisational structure and have the capability to deal with *glocal* (global-local) flows of information and data. For instance, MGI's analysis finds that over a decade, 'all types of flows acting together have raised world GDP by 10.1% over what would have resulted in a world without any cross-border flows' (MGI report, 2016, p. 76). In addition, a *2017 Gallup* survey identified that employees value the possibility of working from anywhere, at distance, which echoes with our earlier discussion on creativity (Section *3.1.2 Creativity*) through the eight features associated with the work environment, one of them being *freedom* (Amabile et al., 1996). The *2017 Gallup* survey also pointed out that the biggest concern for remote workers is the lack or reduction of 'exchanges and collaboration between colleagues, as well as the fact that informal learning which usually occurs in the workplace, is, therefore, more limited' (p. 12).

Thus, given an inescapable digital transformation in many sectors, how can we manage and collaborate over time and distance? Furthermore, beyond the physical office, the following questions should be asked: how can employees participate and interact with each other? What is the line between professional and personal?

In this context, in the establishment of teams or remodelling of work processes, what is the role of the organisation? While autonomy and flexibility appear trendy for organisational management, reexamination of the role of the office that presently facilitates ongoing interactions, advice, impromptu mentoring, and informal interactions with colleagues is required. In respect of the scale of digital development and to preserve in-situ collective intelligence, which can emerge in physical spaces by physical proximity, it is time to rethink the physical environment.

Therefore, consideration of the enabling context (see Section *1.3 Contextualisation* and Section *3.1.5 Community Of Practice*), we address how mobile technology enhances collaborative practices within a new and digital form of *ba*, providing an equivalent of face to face interaction within the *Socialisation* phase or *Originating ba* (von Krogh, 1998; von Krogh et al., 2000; Nonaka & Takeuchi, 1995). We also define the mobile *middleground* (Cohendet et al., 2010) and show how mobile technologies and associated spaces lead to changes in how people work and collaborate. We have applied a qualitative approach to showing how mobile technology supports the reorganisation of work and innovation in CIs applying the Japanese concept of *ba*.

This chapter is supported by two complementary publications that discuss the synthesised direction of thought shown below.

[SECI MODEL]   [INTERACTIONS]   [TECHNOLOGY]

knowledge creation **>** ba **>** digital space **>** permanent slush **>** middle ground **>** pervasiveness **>** ba mobile

[COMPUTER MEDIATED COMMUNICATION]   [NETWORK]   [COLLECTIVE INNOVATION]
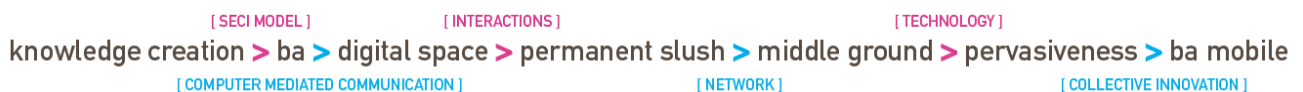
4.2 *Mobile Technology: A New* Ba *of Work Organisation?*[8]

4.2.1 Keywords

ba, collaboration, mobile technology, management, organisation, space, time

4.2.2 Abstract

The advent of the 21st century is characterised by the increase of cultural interaction in relation to a widespread digital environment. Moreover, we are witnessing an ongoing movement and transformation within the use and the sharing of knowledge, and collaboration through the growth of mobile devices and their associated products.

The current digital development, particularly through mobile technology, has given way to new emerging players, intermediation platforms and new human behaviour. In addition, mobile technology can increasingly play the role of catalyst for creativity. It will sometimes even become an active agent of innovative capacity and capability across peculiar spaces and time, either physically, digitally, and, via connectivity, an exchange of intangible resources outside regulated and established procedures.

This paper examines how mobile technology enables a contemporary consideration of the Nonaka and Konno's concept of *ba* within organisations by using a qualitative and hermeneutic approach.

4.2.3 Introduction

The advent of the 21st century is characterised by the increase of cultural interaction (Cornu, 2001; Jenkins, 2006; Jenkins et al., 2013) in relation to a widespread digital environment (Latour, 2005-15; Kline & Rosenberg, 2010), by an exponential acceleration of the 1980's movement in terms of production (Nussbaum, 2013; Graeber, 2015), and more specifically the rapidly evolving *Creative Economy* (WEF/Schwab, 2016; Nesta/Mulgan, 2017). Moreover, we are witnessing an ongoing movement and transformation within the use and the sharing of knowledge and collaboration, through the growth of smartphones, tablets and phablets and their associated products. In France, for instance, mobile development is particularly visible through the latest report 'Le baromètre du numérique' (CRÉDOC, 2018), which indicates that 94% of respondents own a smartphone. The current digital development, particularly through mobile technology (Ahonen, 2010), has given ways to new emerging players, intermediation platforms and new human behaviour (Anders, 2016;

Teece, 2018), where knowledge is totally, or by degrees, dematerialised and 'deterritorialised' (Hamel & Ruben, 2000; Barrico, 2014). In addition, mobile technology can increasingly play the role of catalyst for creativity and sometimes even become active agents of innovative capacity and capability across peculiar spaces and time, either physically (Courpasson et al., 2016; Capdevila, 2015), or digitally (Panahi et al., 2012; Buunk et al., 2018), and via connectivity and exchange of 'intangible resources' (France Stratégie, 2017; Nikolić & Natek, 2018) outside regulated and/or established procedures (Martin-Niemi & Greatbanks, 2010; Ollila & Yström, 2016).

This paper examines mobile technologies in relation to the prevailing restructuration of work and innovative practices. It aims at reconsidering Nonaka and Konno's concept of *ba* (1998) with regard to the latest technological progress and the new digital paradigm. The main purpose of this investigation is to define how mobile technology enables collaboration between workers, practices and systems. Said differently: how does mobile technology, beyond just being a tool, endows a new perspective on the *ba*, and contemporary consideration of its framework? In order to progress in our questioning, we will principally refer to the Knowledge Management (KM) and Information and Communication Technology (ICT) literature, and to seven narratives originating from a qualitative modus operandi. To start, we review the KM and ICT literature concentrated on the concept of shared space, *ba*, and mobile technology. Then, seconded by a qualitative approach (Bonoma, 1985; Eisenhardt, 1989; Yin, 2018) and abductive reasoning (Peirce, 1903; Carcary, 2011), we highlight the findings of the seven developed narratives. Subsequently, we examine the identified benefits and limitations of mobile technology with regards to new forms of organisation of creative work, a fresh prospect upon the concept of *ba*. Before concluding, we take into account future research.

4.2.4 Literature Review

To support our discussion, we first investigated some literature about the concept of *ba* (Nonaka & Konno, 1998; Nonaka et al., 2000; Nonaka et al., 2001). *Ba* can be translated from Japanese to English as 'a context, which harbours meaning'. Thus, *ba* can be considered as a 'shared space for emerging relationships' (Nonaka & Konno, 1998) and information production and assimilation. *Ba* is part of the *SECI model*, developed by Nonaka and Takeuchi (1995), which consists of a cycle of four phases in terms of knowledge creation: *Socialisation*; *Externalisation*; *Combination*; and *Internalisation*. To be more precise, Nonaka and Konno (1998), and Nonaka et al. (2000), defined four sorts of *ba* (Fig. 4.1): *originating* (individual and face-to-face interactions AKA *Socialisation*) *ba*, *dialoguing* (collective and face-to-face interactions AKA *Externalisation*)

ba, *cyber/systemic* (collective and virtual interactions AKA *Combination*) *ba*, and *exercising* (individual and virtual interactions AKA *Internalisation*) *ba*.
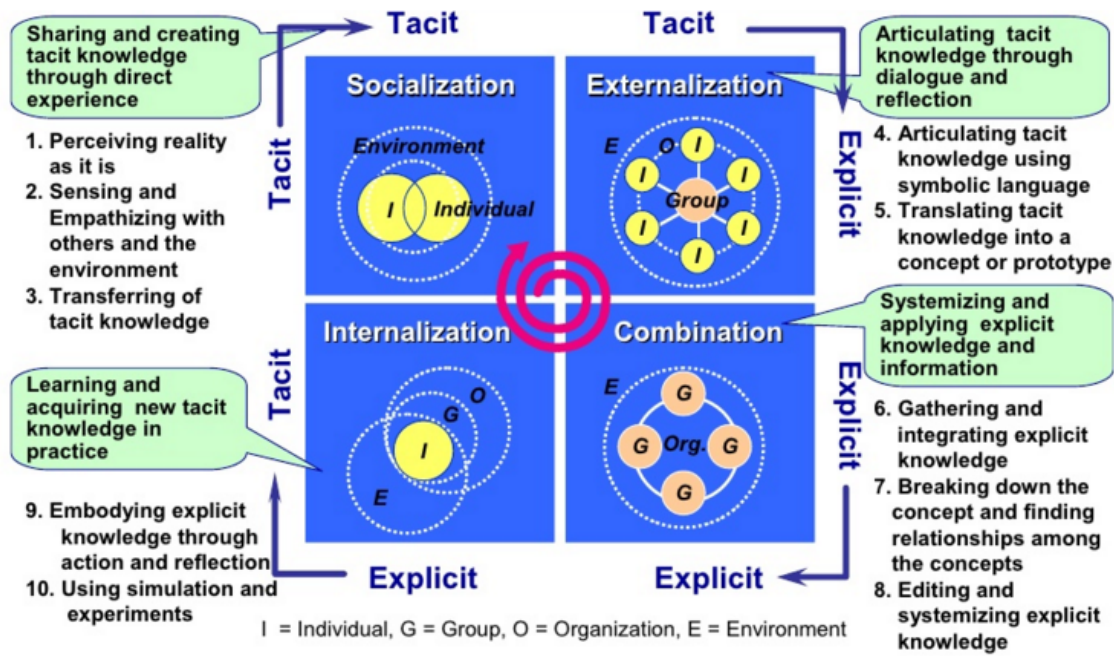
Fig. 4.1 The latest updated version of the SECI model retrieved from Ikujiro Nonaka's keynote (2010): Phronetic Leadership (Slide 10, https://bit.ly/2kpEsRI)

Thus, *ba* offers a space and a context for knowledge creation through the four defined various stages of *SECI*, and where the permutation and reorganisation from tacit to explicit knowledge, a "justified true belief" (Nonaka et al., 2000, p. 7), can take place. Noteworthy, in Nonaka's *SECI model*, ICT is primarily contextualised within *cyber ba* (*Combination*, Fig. 4.1 –points 6, 7, 8, the place of self-reflective conversations) where original explicit knowledge is combined with some current one (Bartolacci et al., 2016).

At the moment, there is a considerable KM literature that concentrates on direct organisational interactions and exchanges of knowledge between workers, collaborators, managers and partners, primarily through face-to-face (F2F) contacts and sharing without considering the technological and international trend in terms of collaborations and/or project management beyond the firm boundaries and sometimes, across multiple cultures. Consequently, we hypothesise that *ba* should be considered through new lenses, in terms of organisational teamwork enhancement, if individuals and teams want to successfully go beyond their own perspectives or boundaries (Tynjälä, 2013). With regards to the emergence of new digital technologies, such as a smartphone, we conjecture that, although still pertinent in some cases, the original definition of the *originating ba* (Fig. 4.1, *Socialization* –'Sharing and creating tacit knowledge through direct experience') is not

accurate anymore: 'Originating ba is the primary ba from which the knowledge-creation process begins and represents the socialization phase. Physical, face-to-face experiences are the key to conversion and transfer of tacit knowledge' (Nonaka & Konno, 1998, p. 46).

Hitherto, scholars have established mobile technology as an enabling technology that can generate substantial social and innovative benefits through 'ubiquitous and continuous connectivity' (Teece, 2018, p 1384), or of being a mediating factor that facilitates spatial and social cohesion in teams and/or organisations (Chiu & Staples, 2013; Anders, 2016) by bridging boundaries in interdisciplinary collaborations (Majchrzak et al., 2012). Furthermore, Nikolić & Natek (2018) argue that the 'digital enhancements' support ideas that intermix more quickly and effortlessly via social media platforms, either through a specific dedicated environment (Buunk et al., 2011; Bathelt & Turi, 2018) or via impromptu and/or unplanned initiatives (Martin-Niemi & Greatbanks, 2010). Thereupon, in spite of not having direct F2F contact, tacit knowledge can be exchanged amongst collaborators via a digital space, through blogs (Martin-Niemi & Greatbanks, 2010), video-conference and/or 'Virtual Community of Practice (VCoP)' (Bartolacci et al., 2016, p. 797), to name a few. This enriched online communication, as in F2F circumstances, enables the exchange and/or the confrontation of ideas, views, values, and feelings, over and above any spatiotemporal differences.

Other scholars such as Zhu (2006), Bratianu (2010) and Hong (2012), for instance, argued that the concept of *ba* is very limited to its Japanese context. Hong even pointed out that discrepancies between local and global knowledge could imply 'inter-cultural adjustment problems and misunderstanding' (Hong, 2012, p. 211). Nevertheless based on Jenkins (2006) and Jenkins & Deuze's (2006) notion of the 'convergent digital culture', we claim that a new form of *ba* can be considered beyond the bounds of any culture. Moreover, what Jenkins et al. (2013) called the 'spreadable media' AKA 'mobile social media' supports our perspective about the fact that the original F2F's attributes defined in the *originating ba* are no longer a requisite. To a certain extent, Jenkins et al.'s point of view radically differs from Hong's argument against Nonaka's *SECI model*, especially in terms of the ability to distinguish between local and glocal knowledge (Hong, 2012). This is why we take this contention one step further by inferring that mobile social media could be considered as being the glue of a kind of meta-culture: the digital one.

Eventually, Bathelt & Turi (2011) also determined that synchronous, or asynchronous, online communication potentially enables key opportunities for collaborators/partners through group emails or digital networking. This kind of interaction and its benefits are not necessarily achievable when F2F exchanges are highly difficult, improbable, if not impossible, within organisations working across various sites and time zones. De facto

Anders (2016) also pointed out that new technologies allow more precise information, and consequently support process efficiency by empowering workers in knowledge-intensive (KI) organisations. As a result, we further claim that F2F exchange is no longer a requirement for tacit knowledge to be shared between individuals, teams or organisations. Divergently, large numbers of scholars, including Nonaka, emphasised that 'being present' (F2F), implies that various cues such as body language (gaze, facial expression, hand gestures, physical proximity or not) (Short et al., 1976; Goffman, 1969) or even a smell (Dupont et al., 2018; Panahi et al., 2012) are key elements during tacit knowledge exchanges. Conversely, Bathelth & Turi (2011) demonstrated that, when using affordable rich-media (images, video, text, audio) and if *Computer-Mediated Communication* (CMC) happens periodically, F2F interactions can occur similarly, or can take place under a new form. Thus, *Socialisation* through mobile technology is possible and opportune, it can happen beyond geographical location and time constraints and further requires organisations to rethink their system management.

Supplementary to the notion of F2F interactions, thanks to CMC, Fruchter (2001) demonstrated the pivotal role of ICT in some project developments across multiple collaborators, sites and time zone as being that of a catalyst, a broker, a moderator and keeping individuals and teams joining sides. As a result, within the company's operational leadership changes (Kotter, 1996), based on the original 'Unfreeze – Change – Refreeze' (Lewin, 1947), we hypothesise that the current mobile technology enhances a *permanent slush*. It nurtures and facilitates the four forms of *ba* (Nonaka & Takeuchi, 1995) no matter when, and it enables continuous and open-ended interplays inside and outside companies' borders, or internally across eclectic departments/services and collaborators (Anders, 2016; Ollila & Yström, 2016, Buunk et al., 2018). Hereinafter, mobile technology enables supplementary or complementary forms of innovative practices within a digital environment.

In addition, referring to Ahonen's (2011) definition of the nine particular characteristics of a smartphone, namely: '1. First Personal Mass Media; 2. Always Connected; 3. Always Carried; 4. Built-in Payment Channel; 5. Available at Creative Impulse; 6. Has Most Accurate Audience Info; 7. Captures Social Context of Consumption; 8. Enables Augmented Reality; 9. Offers Digital Interface (to the real world)', we agree with the Bartolacci et al. (2016) standpoint that mobile devices can provide users with intimate and authentic experiences in the same manner of a F2F situation via apps such as *Messenger*, *MeWe*, *Monkey*, *Slack* or *Discord*, which offer rich-media features, as defined previously. Also, based on Ferraris' (2016) definition of mobile devices being 'ARMI' (*Apparecchi di Registrazione e Mobilitazione dell'Intenzionalità*, - Appliances for

Recording and Mobilizing Intentionality, translated by the author) and their capability of recording every interaction all the time, we foresee some decisive benefits for workers, practices and systems in infinite archiving. Mobile technology can facilitate any search at any given moment, and even empower people to comment in real-time or a posteriori (Panahi et al., 2012); while F2F memories of discussions or actions can fall short, deteriorate or have just never been disclosed to anyone (Taglino et al., 2012). Accordingly, Wang (2010) established that there is a high level of reflectivity and authenticity, in general, in video sharing on *YouTube*, for instance. The infinite archiving possibilities and consequently the ability to retrieve veracious knowledge at any time, even with added value (comments, blog posts), thanks to CMC encounters, works against the main findings from the KM literature which largely praise F2F situation (Siebdrat et al., 2009; Saenz et al., 2012). Indeed Bathelt & Turi (2011) argue against this assumption, as explained earlier, and Panahi et al. (2012) denounced that there is a considerable misrepresentation about a general competence and expertise in systematically, or naturally, understanding linguistic or body cues, or unspoken signs, for example. In other words, not everyone is an expert in psychology, or a skillfully trained ethnologist or ethnographer. On that account and with regard to the *Originating ba*, we identify that mobile technology can add congruity and advantages in organisations by enabling knowledge sharing, knowledge transfer and knowledge management (Paulin & Suneson, 2012) beyond, or not, traditional F2F encounters.

Yet, within an online environment *Socialisation* can be challenging, such as information overload, anonymity and unidentified source of reference. However, some scholars determined that if trust, even a "swift trust" (Askay & Spivack, 2010; Panahi et al., 2012), can be attained then *Originating ba* can occur in spite of a lack of traditional F2F situation. Furthermore, when dealing with Small and Medium-sized Enterprises (SMEs), Petrakis and Kostis (2015) demonstrated that interpersonal trust and knowledge are closely intertwined. Consequently, that knowledge positively affects the number of SMEs, which in return positively affects interpersonal trust: a kind of virtuous circle for SMEs, and their surroundings. By the same token, Botha et al. (2009) recognised mobile pervasiveness as one of the key elements in supporting and mediating collaborative and 'intercultural competencies and communication skills'. In other words, mobile technology empowers people with new ways to deal with (co)creation, knowledge creation and sharing beyond physical, social and cultural borders (Gibbons et al., 1994; Nonaka et al., 2000; Huizingh, 2011). Regardless of Hamel & Zanini's (2014) warnings about the difference between 'information' and 'engagement', Duperrin (2015) advocates a "collaborative nomadism" while referring to mobile technology. Scilicet, the flow of information and knowledge creation inside and outside the workplace can be enabled thanks to pervasive mobile communication via tools such as *WhatsApp* or *WeChat* (*Instant Messaging*, IM), and strengthens collective intelligence (Levy, 1999;

Majchrzak et al., 2012; Buunk et al., 2018; Morel et al., 2018). Similarly, Leornadi (2014) defined that new technology fosters a different type of productivity which is associated with the unique possibilities of a digital working environment, ergo, it generates new convergences and innovative initiatives (Teece, 2018). The corollary is that organisation work is frequently changing and rapidly adapting (Anders 2016; Bhalla, Dyrchs & Strack, 2017) to match the evolving nature of international and national projects or markets (Fruchter & Medlock, 2015). Somewhat, and because practices and systems can expand beyond boundaries, we believe that mobile technology, especially thanks to its permanent and constant archiving characteristics (Ferraris, 2016), develops what Cohendet & Simon (2008)[1] named the *creative slack*, which could be summarised by a myriad of possible unused or underused ideas, suggestions or concepts within organisations.

Thus, although the *sensu stricto* definition of the *ba* (Nonaka & Takeuchi, 1995) implies physical F2F interactions, we argue that the new digital environment and mobile devices shed new light on *ba* benefits, thereupon teamwork collaborations and connections across multiple locations and moments.

The next part focuses on some examples in relation to the newly defined *ba* in relation to mobile technology and a new form of organisation for KI firms. The following section is composed of seven empirical narratives, their overall results and their qualitative interpretation, their synthesis, and some directions for complementary, or supplementary, research.

4.2.5 Examination – Seven Narratives

4.2.5.1 Narratives Syllabus

The research originally started in Aotearoa New Zealand in 2017, and farther expanded to France in 2018. The data that we collected is formed from two groups of participants, who cover a wide range of characteristics such as different genders, various seniority and field of expertise. Although we have samples for variance and understand that a quantitative approach will be more representative, we advance that our work reveals some possibilities of bigger manifestations. The Aotearoa New Zealand group of four interviewees (participants A, M, T, and V; please see below comments about the letters) comprises one female and 3 males, with an average age of 44.5 years ranging between 28 and 61 years old. The France group of three interviewees (participants C, L, and N) comprises two females and one male, with an average age of 35 years ranging between 28 and 42 years old. Their represented work categories are Design, Telecommunication, Hospitality, and Education in a broad sense. Within all the participants' associated workplaces three of them fit the SME definition of the European Commission (less than 250 employees), and the other four are organisations with more than 2,500, and less

than 10,000, fixed-term staff members. Of note, all the Aotearoa New Zealand respondents live and mainly work in Auckland, which is the main economic city, while in France, two of the respondents live in Nice, and one in Montpellier. In parallel, all the subjects have been, or are currently involved with international business, and they are all strongly implicated with their respective creative unit, or division. In terms of mobile technology, all of them use one mobile device at least, and some of them even up to four including a smartwatch. In terms of contribution to their respective workplace, they all have a decisive role and regularly take part in collaborative and organisational and critical decisions, whether it is about a local matter or a global business subject.

Because we started the first set of F2F exchanges in Aotearoa New Zealand, we opted for the use of a Talanoa method. Hence, all narratives are composed of seven face-to-face conversations, following a Talanoa approach (Fig. 4.2). Talanoa is 'a personal encounter where people story their issues, their realities and aspirations' (Vaioleti, 1999-2002), and seems the most appropriate Pacific framework in Aotearoa New Zealand, as well as in the South of France (Latin culture). As described by Vaioleti (2006): "Talanoa removes the distance between researcher and participant, and provides research participants with a human face they can relate to." (p. 25), is why participants were selected within the *whānau* (extended family) of the researcher in order to foster *mo'oni* (pure, real, authentic) information. This is of particular importance since this research is looking at revealing weak signals (Schoemaker & Day, 2009) which cannot be ascertained by quantitative, nor statistical or comparative data at the moment. Furthermore, Talanoa allows people 'to engage in social conversation which may lead to critical discussions or knowledge creation that allows rich contextual and inter-related information to surface as co-constructed stories.' (Vaioleti, 2006). As follows, the procedure consisted of (i.) audio-recording our loose conversation thanks to our smartphone (Fig. 4.2 – *Toli*); (ii.) compiling field noted and the recorded material at a later date (Fig. 4.2 – *Toli*); (iii.) transcribing and synthesising the recounting subsequently (Fig. 4.2 – *Tui*); (iv.) following the ako framework which implies reciprocity from both parties, in consequence: perusing each participant's reaction afterwards (Fig. 4.2 – *Tui*).
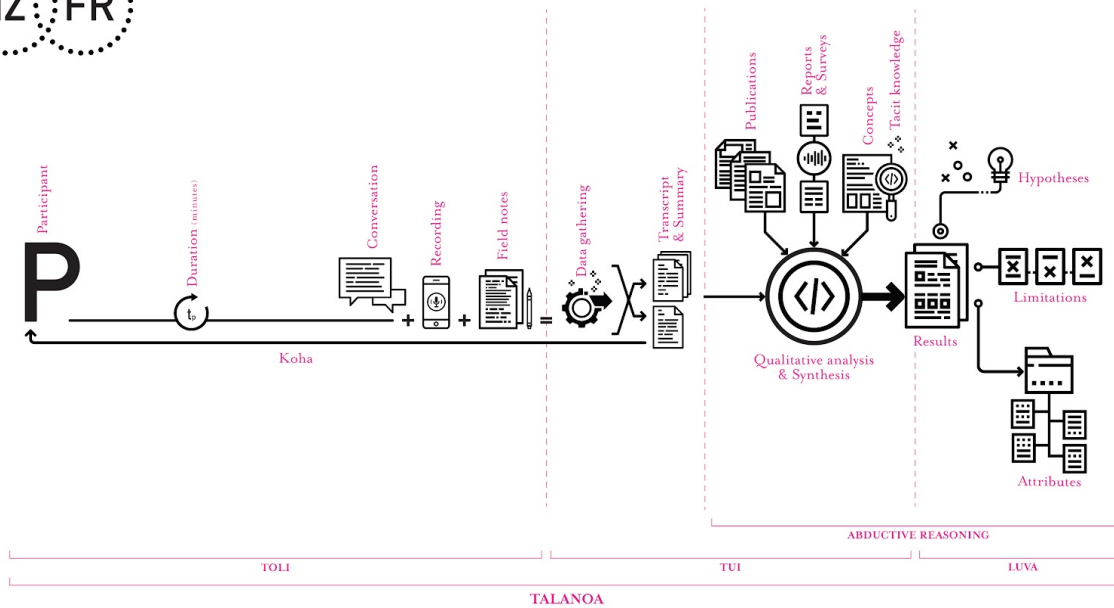
Fig. 4.2 Visualisation of the overall research design; adapted from Antonczak (2019)

In order to preserve the privacy and indistinctness of the participants, we use a letter to represent their voice in any citation. Also, in Figure 4.2, the letter 'P' represents the sum of all the participants, and 'tp' is a generic indication of the duration of a conversation. Also, in relation to this publication, we would like to note that two conversations happened in a *café* rather than at the participants' workplace and that another one occurred online via *Whereby* (a video meeting platform) – we will come back to this peculiar point later. Finally, coupled with an alternating view between the "conflicting literature" and the "similar literature" (de Weerd-Nederhof, 2001) and our findings, we were able to ascertain some patterns among the interviewees' sharing which are highlighted in the *Discussion* section (Fig. 4.2 – *Tui*).

4.2.5.2 Research Framework

This research is using Eisenhardt's approach (1989) to deal with the seven narratives and their unveilings, which can be considered as a fair middle ground, between four and ten, without compromising the sturdiness of the results. We also refer to the "use of cross-case analysis and synthesis" (Taylor and Søndergaard, 2017, p. 75). Moreover, as partly visualised in Fig. 2, the investigation follows Bonoma's (1985) five-phase scheme, such as (1) description (*Tui*), (2) classification (*Tui*), (3) measurement/estimation (*Toli*), (4) establishing of association (*Toli*), and (5) determining cause and effect (*Toli*).

Furthermore, despite the sparse literature with regard to mobile technology in relation to knowledge and/or organisational management, our approach refers also to Yin's (2018) statement that "case studies, like experiments, are generalisable to theoretical propositions." (p. 21). Also, to consolidate some discoveries and to support our divergent thinking, alternating between the collected data and its synthesis (Carcary, 2011), we use abductive reasoning (partway *Tui, Luva*). This complementary approach invigorates the triangulation of the *Literature Review*, the seven *Narratives* and our knowledge gained through nearly ten years of work within the mobile field. As a result, our process takes into consideration the explicit and tacit knowledge in order to generate 'something old and something hitherto unknown' (Peirce, 1903) which contributes to the definition of a new form of collaborative organisation amongst networks, *Communities of Practice* (CoP), teams.

Finally, to support the analysis, an interpretive perspective is used, following some traditional approaches in management. Organisational theorist Karl Weick (1995) talked about actors, in any situation, as processing information and reacting to it. Other theorists have moved one step further by arguing that actors 'enact' their environments. In our particular case, with a specific focus on the 'space in-between', the new forms of work organisation (coworking spaces, fab labs, living labs, makers spaces, and a few more), we refer to the use of cross-narrative analysis and synthesis (partway *Tui, Luva*).

4.2.5.3 Data Results and Background

After the duologues, and the feedback stage, the research focused mainly on ascertaining whether the accumulated data was pertinent, or not, in order to identify a pattern, or recurring phenomena (Gomes & de Oliveira Miranda Gomes, 2009). Also, according to Taylor and Søndergaard, (2017):

> '*In this phase of cross-case analysis each individual case study is treated as a separate study. The advantage of the cross-case synthesis is that the analysis is likely to be easier and the findings more robust than relying on a single case analysis.*' (p. 97)

As a result, the interpretation of the seven narratives (*Tui, Luva*) works out some of the key mobile benefits defined by Ahonen (2011), as explained previously. According to Ahonen, there are nine unique benefits of mobile and, this research acknowledges six of them: Mobile is *the First Personal Mass Media*, *Always Connected*, *Always Carried*, *Available at Creative Impulse*, *Enables Augmented Reality* (in our case: geolocalisation), and *Offers Digital Interface*.

Based on the discoveries of the four Aotearoa New Zealand narratives (Antonczak, 2019), we outline that mobile technology: (i.) allows people to work while commuting, and during any convenient or relevant short timeframe; (ii.) keeps its users connected and aware of any new information or knowledge exchange; (iii.) makes some working tasks easier (ergonomic factor) and affordable; (iv.) geolocates data which adds a sense of authenticity and truthfulness. In other words, mobile technology also embodies the concept of the 3As (Anything Anywhere Anytime) known as 'ATAWAD' (Any Time, Any Where, Any Device). Then, it constantly and immediately procures contextualised information as well as activities' recordings with regard to appropriate and significant time-space nexus. In consequence, we surmise that mobile technology benefits sheds new light on the *SECI model* (Nonaka et al., 2000) by regularly interplaying with tacit-explicit knowledge transfer cycles, and by enabling workers to perform in diversified surroundings, such as personal dwellings, *cafés* or public gardens, to name a few. This last notion substantiates Anders' (2016) findings of the "benefits for flexible working in which employees may spend significant amounts of time working from outside the office, whether at home or from public spaces like coffee shops." (p. 247). Similarly and although this research does not precisely encompass comparative analysis but rather unravels hidden/unconscious patterns, we remark that the French narratives revealed some congruent qualities about mobile technology. Below are some respective and resembling examples of the Aotearoa New Zealand benefits, which were expressed in French and translated by the author:

> i. '*The biggest advantage is that I can work between working hours: in transport, when I am waiting for the doctor, on the move*' (Participant L)

> ii. '*That's right. It happens to me all the time. No, it's just the same as the fact that when I'm on the move, on public transport it allows me to continue to monitor my emails and respond to them*' (Participant C)

> iii. '*When I'm in a meeting or something like that and I can listen with one ear, I pick up my phone and read my emails and see what I can process right away* (Participant N)*; It* (smartphone) *is always on and almost always in my hand*' (Participant L)

> iv. '*There are things I only do on smartphones, like managing social networks now... in particular the* Facebook Page *application which is extremely effective*' (Participant L)

Hence, going back to our findings in the previous *Literature Review* section, mobile technology enables the co-creation and the sharing of knowledge across multiple spatio-temporal environments (Nonaka et al., 2000) in spite of a lack of physical encounters, or beyond visceral F2F interactions. Furthermore, mobile devices can

also support the identification of the context-related knowledge within the *ba* through their flexible way of recording and sharing, in any surroundings. Also, they enable dynamic interactions between users and/or workers in a trustworthy and a "poly-synchronicity" way (Anders, 2016, p. 257)[2].

Our methodological approach does not take into consideration comparative analysis at the moment. However, by going back to the hypothesis that mobile technology can enhance new forms of organisation of work and innovative practices, and by looking at these two similar findings, we argue that mobile devices enable collective innovation and collaboration between workers, practices and systems. Overall, the four distinguished attributes related to mobile technologies are *autonomy*, *diversity*, *openness*, and *interactivity*; and the three core limitations are *addiction*, *infobesity* and *hyperconnectivity* (Table 4.1).

[PARTICIPANTS]							
	Aotearoa/New Zealand				France		
	T	V	M	A	L	C	N
[ATTRIBUTES]							
AUTONOMY	+	+	+	+	+	+	+
DIVERSITY	+	+	+	+	+		+
INTERACTIVITY	+	+	+	+	+	+	+
OPENNESS	+	+					+
[LIMITATIONS]							
ADDICTION		−			−	−	−
INFOBESITY	−		−			−	
HYPERCONNECTIVITY	−	−	−	−	−	−	−

Table 4.1 Synthesis of the empirical findings in conjunction with the Literature Review

Through the various conversations, we also deciphered a repetitive message, which is encapsulated by this excerpt from Participant C:

> '*So... after the disadvantages of the mobile... well... let's say its advantages are its disadvantages i.e. you are actually permanently connected and I find it quite difficult to disconnect*'

Coincidentally and encouragingly, our findings echo Cavazotte et al. (2014) who, through a study in Brazil, demonstrated that mobile devices provide users with higher degrees of liberty and space for working while they might equally increase the level of stress, or performance anxiety, due to a higher workload and expectations from managers. And, although Obushenkova et al. (2018) later suggested that "the perceived expectations can

lead to hyperconnectivity which can have a number of negative performance and health outcomes such as technostress, burnout, absenteeism and work-life conflict" (p. 193), we feel that all the participants of this research are able to manage this internal dilemma fairly well. It also seems that the French respondents were more concerned about the potential intrusiveness of pervasive devices, and invoked a certain mobile etiquette of which to be mindful. The following section will address these findings in relation to innovative practices and organisational work in minutiae.

4.2.6 Discussion

Based on the previous sections, the following discussion presents three peculiarities that demonstrate how mobile technology enables collaboration between workers, practices and systems. In a nutshell, mobile technology can thrive the notion of *ba*, by (i.) broadening the notion of collaborative and innovative practices; (ii.) enabling transdisciplinarity interactions across individuals and teams; (iii.) defining a new spatiotemporal vicinity for organisations.

4.2.6.1 Broadening the Notion of Collaborative and Innovative Practices

Within this research, the unanimously unveiled attributes are 'autonomy' and 'interactivity' which relate to the ability to work, to connect and to exchange across multiple sites (inside and/or outside the firm) and time zones. Therefore, knowledge production is thrived by mobile technology which provides a new form of *ba*, a contemporary digital context for knowledge creation (Nonaka & Konno, 1998; Nonaka et al., 2000) with a freshened definition of the *Socialisation* stage. Thanks to mobile devices, there is a new construct of immediate, frequent and spontaneous social interactions (Shapin, 1995; Nonaka et al., 2000; Chesbrough et al., 2014; Teece, 2018) which enhances the emergence of new, complementary or supplementary potentials for innovative initiatives and practices. Despite some possible inconveniences such as technostress (hyperconnectivity) and/or work overload (infobesity), the empirical findings confirm the original hypothesis that claims that mobile devices enable new ways of collective and collaborative innovation, and, as a consequence, new forms of work organisation and production for KI companies.

Besides, using a hermeneutic perspective, we advance that mobile technology productively contributes to fostering modernised ways to structure work and innovative practices. Although Cavazotte et al. (2014) identified smartphones as a potential burden for employees in Brazil (increased workload, issue between personal and professional life, higher expectation in terms of response rate for email/telephone

communications), they also clearly demonstrated that mobile technology empowers people by giving them "greater personal freedom" (what we labelled 'autonomy') and "space for manoeuvre" and "enhanced possibilities of connectivity, rapid access to information" (p. 73), (what we defined as 'interactivity'). Our investigation also revealed that our participants are conscious and well aware of some negative aspects of mobile technology and that they have developed a personal etiquette in order to fully benefit from receiving information on the go, getting notifications, and being up-to-date with what's going on with different networks and within a defined space and time.

In response to Bratianu (2010) and his argument against the *SECI model* where "socialisation and combination are only processes" (p. 115), we found that there are two key components to take into consideration at an organisational level when dealing with mobile technology. First, as quickly prompted in the introduction, the 21st century is distinguished 'by the pervasiveness of digital technologies and the dynamics of information sharing typified by social media' (WEF/Schwab, 2016). Hence, the new flow of exchanges facilitated by technology, *per se* mobile technology, does not require F2F interactions anymore as far as people/workers using a pertinent media, or 'rich-media' (Bathelt & Turi, 2011; Panahi et al., 2012), to reach their respective audience/clients. Second, it is progressively becoming important to thoughtfully pay attention to the recipient, the group, or the network of the destination of the information (Bartolacci, 2016). Therefore, mobile technology implies a specific level of awareness in terms of psychology and culture, ergo it can sometimes challenge organisational routines.

Although Capdevila (2018) claimed that 'colocation and face-to-face interaction also strengthen community identity and facilitate peer-to-peer learning' (p 5), our research reveals a weak signal amongst both groups (Aotearoa New Zealand & France) which could be summarised by the fact that mobile devices allow their users to work in an eclectic environment. Corollary, mobile technology fuels users' creativity and inspiration and streamlines formal/informal knowledge exchanges concurrently with authenticity. This particular point raises the question of the traditional workplace stereotypes and their organisation (Weick, 1995; Kotter, 1996; Drucker, 2007), especially in terms of top-down process (Zhu, 2006; Bratianu, 2010), and creative behaviour (Amabile, 1998; Caniëls & Rietzschel, 2015), which could be considered in further research.

4.2.6.2 Enabling Transdisciplinarity Interactions across Individuals and Teams

Here, we will focus on the benefits of mobile technology which enables occurrences across multiple perspectives from eclectic experts and collaborators. Indeed, another attribute that arises from the findings of

the narrative is 'diversity': diversity of location, diversity of environment, diversity of time and also the diversity of voices. Almost all participants acknowledged that it is easier and easier to share thoughts, spontaneous observations, or even questions with a dedicated, or not, group of people thanks to the affordance of mobile technology. Although using mobile devices may be restrictive in some cases in terms of readability (reflection, light conditions), or ergonomy (typing a long text, fingers size), it provides users with advantages such as "always in my pocket" (Participants T, V, M, L & N) and "always switched on" (Participants T, V, M, N, C & L). Thus, mobile technology enlightens users into a farther *ba* –a frame 'made up of the borders of space and time' (Nonaka & Konno, 1998, 41), where VCoP (Bartolacci et al., 2016) can interconnect in a 'polysynchronicity' way (Anders, 2016). This fluidity in exchanges and sharing enhances the capability and capacity for innovative practices, maintaining collaborative processes (Crosby & Bryson, 2010), and co-creating solutions (Huizingh, 2011). To a certain extent, referring to the notion of "middle ground" (Cohendet et al., 2010) and to the fact, according to Amin & Cohendet, (2004), that the "vector of space, in contrast, has remained comparatively undertheorized" (p.86), we suggest calling the newly flexible collaborative environment across time and space, which does not systematically require F2F interactions, the *ba mobile*.

Moreover, based on the unveiled weak signals through the empirical and theoretical results, we believe that the *ba mobile* echoes with Capdevila's (2015) definition of coworking space, which includes: being open, encouraging co-creation and collaboration via various groups of interest (CoI –*Community of Interest*) or expertise (CoP: Lave & Wenger, 1991; Wenger, 1998). Per contra, the main difference between a *ba mobile* and a coworking space resides in the fact that, respectively, one is digital-first with some physical possibilities while the other one is the opposite: physical first with some digital capabilities. Furthermore, when looking at the financial aspect of a *ba mobile* versus a coworking space, we foresee that in the first instance it is unspecific or vague while in the second one it is an important requirement or condition. In other words, based on the definition of the four phases of the innovation process such as 'ideation', 'prototyping', 'commercialisation' and 'marketing' (Capdevila, 2015), the *ba mobile* could be regarded as a peculiar coworking space focussing more on the first (*ideation*) and last phase (dissemination/*marketing*).

To further address the transdisciplinarity interactions across individuals and/or teams, we would like to point out that our findings also show that mobile technology fits within the notion of uninterrupted flow defined by Barrico (2014), as well as Alter's (2000) description that "a technical innovation does not only modify the activities directly using the tools in question, but also the social entity living from these activities." (p. 15, translated by the author). Thus, the *ba mobile* not only supports and enables knowledge creation, conversion,

transfer and sharing, as underlined by participants M, C & L and highlighted by Paulin & Suneson (2012), it also shapes new relationships over and above physical and presential constraints. However, in some cases, Obushenkova et al. (2017) identified that the use of smartphones in workplaces can lead to hindrances such as 'addiction' and 'hyperconnectivity'. Our findings, despite a different methodological approach and focus, are in concordance with Obushenkova et al. who further argue that mobile devices can become a drawback in spite of their ability to facilitate the organisation of priorities (notifications, on the go information), time management (calendar, reminders), and processing information immediately (Anders, 2016; Antonczak, 2019). To sum up, mobile technology provides users with friendly adaptability, modularity and agility (Morel et al, 2018) while enabling flexibility, adaptability and propinquity, which fluidifies exchanges of knowledge as implied in *ba* (Nonaka et al., 2000, 15).

Additionally, mobile technology enables a *hic et nunc, passim* which stimulates 'communal conversations' (Majchrzak et al., 2013) amongst CoIs and CoPs but also neophytes or amateurs. In this context and in spite of 'infobesity' (Participants T, M & C), the creation of knowledge across various fields and people coincides with Nonaka et al. (2000) notion of 'redundancy' and paradoxical dynamic well defined in the *SECI model* (p. 29). Therefore, we ascertain that mobile technology can provide organisations with a 'middle ground, which ensures the continuous interactions between the formal organizations of the upper ground and the informal local communities of the underground' (Cohendet & al., 2018, p. 1057). All in all, in conformity with the existing literature, our empirical findings demonstrate that mobile devices are attractive apparatus for sharing spontaneous and authentic communication, for connecting eclectic professionals or amateurs over and above spatiotemporal limitations, especially within KI organisations and during the ideation and the dissemination phase of a project.

4.2.6.3 Defining a New Spatiotemporal Vicinity for Organisations

Amabile (1997) identified that 'autonomy' fosters creativity and innovation and, one year later, Amabile (1998) ascertained that there are a lot of organisations that misused their physical space:

> '*Indeed, a problem we have seen time and time again is managers paying attention to creating the "right" physical space at the expense of more high-impact actions, such as matching people to the right assignments and granting freedom around work processes*' (p. 54).

Amabile (1998) further insisted on the importance of pre-eminence and the value of communication amongst workers and what we summarise by having a thoughtful disagreement or divergent perspectives when required.

Thus, based on our findings, we argue that mobile technology enables meaningful and eclectic interactions inside or outside firms thanks to its affordance, pervasiveness and 'rich-media' qualities. It also enhances the prospects of 'getting the right information to the right person at the right time' beyond hierarchical and formal working relationships (Chatti et al., 2007, p. 409), and it broadens the scope for behavioural changes in communication practice (Anders, 2016).

In some cases, the *ba mobile* can provide workers or collaborators with a feeling of 'openness', which means that people are no longer restrained by the office surroundings nor by the humdrum working hours. Hence, a new kind of workaday can take place in some situations and beyond F2F connections. This newly defined spatiotemporal vicinity is also a prevailing observation on what Amin & Cohendet (2004) identified as 'distributed competences, rule-free and flat organization, social capital, employee autonomy, information sharing, connectivity, results orientation, flexibility and adaptability, continuous learning, and visionary leadership have become the new watchwords of knowledge-based success' (p.70).

Moreover, we claim that mobile technology enables CoIs and CoPs via social connectivity, thanks to its accessible and uncomplicated handling. It facilitates interplay across networks through authentic and timeless exchanges, and sometimes co-creation via project-based incentives (Bennis & Biederman, 1997; Cohen & Prusak, 2001; Anders, 2016).

Paradoxically, and referring to the definition of 'pharmakon' (Derrida, 1968), mobile technology, like any technological object, can be as much a remedy as to a poison. Without careful management and conscientiousness, the *ba mobile* could become a source of technostress, 'cynical behaviour', sometimes leading to burn-out (Cavazotte et al., 2014). So, the nimble approach praised by some respondents (Participant L, V & T) could be detrimental in some cases and for some people, who then will not be able to clearly perceive the benefits of mobile technology within their organisational routines (Anders, 2016). Obushenkova et al. (2017) also identified that mobile devices, if not judiciously used, could create some 'work-life conflict' (p. 193) and become counterproductive consequently. Also, they established that not all activities, or types of organisations, are suited for this kind of modus operandi. However, because our investigation focuses on KI organisations only, the recent findings of Lansmann & Klein (2018) who prescribed finding 'a balance between collaborative and uninterrupted work' (p. 11) are prominently in line with some of our narratives sensing (Participant T, V, A, L & N).

Finally, without falling into any parochialism, we acknowledge that mobile technology enables the communication between innermost and/or outermost KI companies, and supports collaborations and transversely permutable environments and regions of the globe. It also enables a 'technologically-induced organisational change' (Leonardi & Barley, 2008) when managed with thoughtfulness. As a deduction, the *ba mobile* challenges new forms of work organisation and fosters the creation of another dimension, of a new kind of 'enabler space' (Morel et al., 2018) thanks to 'enabling technology' (Teece, 2018). Supported by our empirical findings, we further claim that mobile devices' affordances sustain ongoing interactions and exchanges, as well as reshape new modes of cooperation via a digital and online culture. This later paradigm shift can be characterised by four spatial tendencies: (i.) *physicality* (localisation of workplace and workers), (ii.) *phygitality* [3] (social networks), (iii.) *digitality* (Internet, online storage), and (iv) *invisibility* (connection through networks such as Wi-Fi or 5G, for example). Yet, mobile technology offers new territories and dexterity for KI organisations by enhancing a social and experiential change in organisational work (Teece, 2018).

4.2.7 Future Developments

The collected data represents a limited range of possibilities, and further interviews/analyses of the full data set are still in progress. Also, with regard to the methods, it might be interesting to explore in more detail pieces of information, via a quantitative approach, to find out more parameters in order to develop more path models (Huizingh, 2011), and to triangulate the new findings with further qualitative data, for instance. Thereupon, it might be pertinent to explore in further detail the potential of mobile technology in relation to our findings via a specific scientific protocol using mobile technology itself, such as the accelerometer coupled with the *GPS* function, in order to gather detailed information about workers' location/time during a day, a week, a month, for instance. Another option could focus on language analysis and used tools (apps/mobile social media or services) during a specific project/collaboration that may identify a different set of data.

Furthermore, it might be interesting to review in detail the space of convergence, or divergence, between our findings, about the role of mobile technology in comparison to the intermediaries (Agogué et al., 2017), and the *innomediaries* (Chesbrough, et al., 2014) in relation to informal/formal practices (Agogué et al., 2017, Table 3), or to social representation with regard to emerging technology (Dupont et al., 2018).

Lastly, but not least, although mobile devices appear to be the perfect tool for transient and dynamic collaborations, involving a change of mindset, or particular sense of behaviour and organisation within a flexible working environment, supplementary research about individual/organisational creativity processes should be undertaken in the specific realm of open innovation, 'including user innovation, co-creation, cooperative R&D, technology sourcing, and related topics' (Chesbrough et al., 2014, p. 283).

4.2.8 Conclusion

This paper makes three contributions.

The first one is about shedding new light on the *SECI model* (Nonaka et al., 2000) by providing a new perspective on the *Socialisation* phase (*Originating ba*). Indeed, after analysing both KM and ICT literature, and then triangulating the theoretical findings with the empirical data unravelled from the seven narratives, we demonstrated that mobile devices enable a new and digital form of *ba*, named the *ba mobile*. With respect to the original *ba*, the *ba mobile* allows collaborations in an authentic way in spite of the occasional absence of F2F contact. Hence, collaborative practices can happen amidst any surroundings or environment through and thanks to the affordance of mobile devices. Therefore, mobile technology, as stated by Anders, (2016), enables 'knowledge-sharing benefits of communication visibility by closing the gap between metaknowledge and situated practice' (p. 254).

The second one consists in typecasting four mobile technology's virtues, namely 'autonomy', 'diversity', 'openness' and 'interactivity', as well as three shortcomings such as 'addiction', 'infobesity' and 'hyperconnectivity'. Although our research uses a different approach and focus, these results resonate with Cavazotte et al.'s findings on the use of smartphones in Brazil. It also highlights new understandings of social collaboration practices through examining weak signals and by demonstrating how mobile technology can as suggested by Leonardi & Barley (2008) 'provide people with the ability to do old things in new ways and to do things they could not do before' (p. 161). Additionally, we claim that the *ba mobile*, based on an 'enabling technology' (Teece, 2018), fosters a contemporary prospect of what Morel et al (2018) identified as an 'enabler space'. Creativity therefore no longer has a specific territory, nor time constraint; it happens in a 'middle ground' (Cohendet et al., 2010), a spatio-temporal continuum situated between local and global (*glocal* [4]), between national and international (borderless, ubiquity), and between F2F and online (*phygital*).

The last one lies in considering future avenues for further inquiry possibilities. Based on Leonardi & Barley (2008) and their definition of 'technological-induced organisational change' via the 'relationship between

agency, the material and the social' (p. 168), it might be pertinent to use some data gathered through mobile technology itself, and compare the new findings with the current ones. From another angle, it is tempting to further explore how mobile technology will impact productivity within a limitless and never-stopping digital environment.

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4.2.9 Acknowledgments

4.3 Synthesis

4.3.1 Scoping some Practices

Evidence of the behaviour of mobile technology is sparse, very specific, and quickly out of date due to its constant evolution and unconsciously applied practices. So questions about the validity and comprehensiveness of data are legitimate, however, in this section, we review three aspects of mobile technology in relation to each of the participants described and their professional situation. In the review, our approach applies the four *Knowledge Assets* (KAs) defined by Philip (2018):

> '*Knowledge Assets*' (KA) are assets or resources specific to a firm that can aid in the knowledge creation process. These assets could either be related to explicit knowledge (such as databases,

manuals, and product design) or to tacit knowledge (such as trust, organizational culture, and individual know-how). They can act as inputs, outputs, or moderators in the knowledge creation process. (p. 123)

Philip (2018) also determined a correlation between the four KAs in the *SECI model* (Nonaka & Takeuchi, 1995; Buunk & Hall, 2018), where Routine KAs are associated with *Socialization* (p.123); Conceptual KAs are related to *Externalization* (p. 123); Systemic KAs are linked to *Combination* (p. 124); Experiential KAs are affiliated to *Internalization* (p. 124). For each participant, we will probe (i) *the main types of use*, (ii) *the practices it enables*, and (iii) the *knowledge it creates* with regards to Philip's KAs.

Participant T

THE MAIN TYPES OF USE

T works as a sound designer, researcher and academic advisor in higher education. To organise ideas, T primarily takes notes on an iPad, especially sketches, outlines, or diagrams:

I probably start with my mobile device to... just generate an idea, kick something off.

T also takes notes during meetings and these notes are stored online and synchronised between all the mobile devices. T takes photos of book covers, articles, or more generally, things that could be a source of inspiration. In addition, T shares thoughts on social media such as *Twitter*, *Google+*, or *Flipboard*, using the mobile GPS function to geo-locate coordinates at the time of the sharing.

THE PRACTICES IT ENABLES

The smartphone or the connected watch allows T to be available all the time, regardless of the place or time, and therefore T avoids being 'too stressed'. This notion of space-time is very important for T because the smartphone facilitates regular or impromptu exchanges with the international teams in which T works. Thus, T understands and accepts that people can make contact outside of normal working hours (NZT) and has the power to choose to respond or not.

Very important to T's research activities, mobile technology allows T to monitor and keep an eye on the activity of colleagues or on current trends, in real-time. Therefore, mobile devices allow T to animate or feed the communities of practice or interest in which T is a member and to interact with motivated people of the same mindset:

I guess, one of the things that defines it as social, so it's about collaboration, connecting people, and being able to use those in a team environment. It does mean that the rest of the team has to engage with those tools, so you end up collaborating with a group of people who are willing.

Finally, mobile technology enables time management and allows T to optimise commute times between home and work; about 2 hours per day, round trip, by train. With the smartphone, T can scan or manage all his news from email, direct message (DM) via apps like *Twitter* and *Instagram*, or indirect messages via comments or replies on platforms like *Linkedin*, *WordPress*, and many others.

THE KNOWLEDGE IT CREATES

According to T, smartphones create a link between the formal and the informal environment, they allow a certain authenticity, especially in the exchange of knowledge and learning. In another way, the mobile nature of smartphones allows people to work in more inspiring environments, such as a park or a *café*:

I can get people to think more creatively than they would if they were stuck in their own office, where they get distracted by emails coming in through, or, you know, something that's urgent.

Therefore, we assert that mobile technology brings a new sensory dimension to knowledge (KAs Experiential and Conceptual, Philip, 2018, p. 123).

Participant V

THE MAIN TYPES OF USE

V works as a teaching and learning consultant and project manager in higher education. Mobile technology allows V to write down ideas at any time in any context, and to quickly exchange initial feedback with collaborators or like-minded people. To remind them of ideas or tasks to be done, V sends notes to back themselves instantly or on a scheduled basis. Despite being in an intense interdisciplinary environment, the key point in V's daily mobile usage is to be able to document tasks and ideas:

I think you need freedom and flexibility.

THE PRACTICES IT ENABLES

The fact that the GPS can identify the precise location of the recording of a piece of data allows V to better remember the idea or the state of mind in which V was at the inception or transcription of the idea. V's smartphone becomes a kind of personal assistant to V's memory:

Because my work involves quite a lot of meetings here and there, some days are quite busy so it's good to get a reminder on my wrist saying, just a gentle tape saying there's something happening.

Moreover, the exchange of ideas via groups like *Twitter* or *Facebook* is crucial in managing V's multiple projects. Also important is having the ability to compare quickly the initial idea with the same or similar ideas that already exist on the Internet. V records and shares thoughts directly in writing or orally via voice memo, with the automated transcription available, such as the *Keep* application (Google). According to V, the notion of remembering an idea and its context via GPS is one of the essential elements of mobile technology:

In the way I use my phone, is to unclutter my head.

Another important point is the small size of devices (smartphone, *Apple Watch*) which allows V to optimise the commute between home and office; about 1.5 hours per day, round trip, by bus and train. In this context, V speaks of multiple dimensions of thought, as opposed to the uni-dimensional position in front of a screen with a keyboard, on a desk. For V, the keywords are flexibility and ease because mobile applications are intuitive and free to obtain or have little cost. V's Internet-connected mobile devices enable V to stay constantly connected with the required information and to manage time more easily by avoiding file transfers or format compatibility problems:

I'm just trying to make it easy for myself.

THE KNOWLEDGE IT CREATES

V's comments are philosophically emergent, where due to the potential that mobile technology can offer, V believes in being able to think better, to better organise, and handle major concepts.

Here, the notion of collective knowledge is important because there is a lot of sharing through platforms such as *Google Drive*, *Twitter*, *Facebook*, and others, and smartphones enable access to all this information and exchanges. The constant recording activity provide the possibility for smartphones to glimpse or reveal patterns which in this context, we assert that mobile technology is fractal and above all is contextual knowledge (KAs Conceptual and Systemic, Philip, 2018, p. 123).

Participant M

THE MAIN TYPES OF USE

M is co-founder and director of several hospitality and culinary companies. For M, it is crucial to be always

connected to tasks or information that are constantly changing. M needs to keep in touch with all the international employees with the agility to be able to respond to or act on a problem that could damage M's companies reputation. Furthermore, to be able to provide relevant feedback M documents work practices on the ground, such as a photo of a bad set-up table as 'irrefutable proof' that 'speaks for itself'.

THE PRACTICES IT ENABLES

In the case of international companies in the hospitality and culinary industry, smartphones foster instant, real-time communication with employees and customers:

> *So I give you the time but I do look at it because if I don't, I can get between 100 and 200 messages a day, quite easily, and… because I also have another business going in 38 countries.*

Moreover, despite the many meetings M is required to attend, smartphones allow M to keep up with the continuous flow of information. Smartphone notifications also allow M to better manage time. The highlight is being able to make quick decisions based on real-time information and to stay alert to subjective emotions or feelings from a customer or client:

> *If it's a false accusation, which our industry is filled with, like* TripAdvisor *per say, I take court action against reviews that are not truthful.*

As CEO, the mobile device enables M to be quickly informed directly or indirectly, from which a horizontal hierarchy emerges. M admits that mobile technology facilitates frequent, simple, and informal exchanges in tone which provides an improved collected knowledge of the activity between shareholders or employees of the companies. In return, the smartphone allows M to give quick feedback from whichever country M is working on topics from managing the latest amendments of the website to new communication campaigns. From M's viewpoint, mobile technology is a substitute for a personal assistant who would cost much more financially with salary, bonuses, sick leave, and emotionally with HR, psychology management, for example.

Finally, mobile technology provides M with ease of use and immediate access to the Internet and that increases productivity:

> *The point is, the minute I open it up (unlocking screen), I'm doing something. So, it's quicker and easier than a PC.*

THE KNOWLEDGE IT CREATES

Mobile technology facilitates a paramount temporal space for the development of knowledge that, while fragmented (geographically and cognitively), is always up-to-date and insightful due to its constant and swift

updating. In this field of activity, knowledge is strongly associated with the level of precision and acuity of practices in relation to specific information or situations. We argue that mobile technology best facilitates knowledge created through time (KAs Routine and Systemic, Philip, 2018, p. 123).

Participant A

THE MAIN TYPES OF USE

A works as a web designer and UX principal in a large telecommunication group. A manages several projects and teams and is often on the move between the different sites of the group. A has a lot of interaction with customers and users of the services offered by the company. A is creative and uses visual elements a lot. For A, it is important to have a tool that allows A to move from theory (theoria) to practice (praxis and poiesis) quickly.

THE PRACTICES IT ENABLES

In general, A is involved in a lot of activities in a huge building (company headquarters) with departments spread across several floors, so the smartphone allows A to continually manage tasks and disruptive requests:

Well I kind of take it (my mobile) everywhere 'cause probably, it's like a lot of us.

For A, the photographic functionality of smartphones is very useful for two key reasons, providing access to information (creation) and memory support (documentation). For A, mobile technology enables A to organise and consult references in different formats (audio, audiovisual or written) to define strategies and then to support tactical implementation. A also considers that voice search, for example using *Siri* (Apple's voice assistant), in the middle of a team is inclusive because collaborators can hear the request and answer immediately. Thus, the team feels more engaged and involved in the development of a proposal. In addition, according to A, using the voice function to leave voice messages, instead of answering in writing, allows A to convey some emotion, which strengthens relations between collaborators (direct and authentic), and reduces the risk of misunderstanding (tone of voice and informal language). In addition, A manages most of the assignments in project mode, which requires A to fill in daily timesheets. At the end of a long day, it is sometimes difficult for A to remember all the completed tasks or activities, but is alleviated by the notes and photos that A regularly takes and the metadata automatically recorded by the smartphone. An integral part of A's practice is being able to continuously and simply record the phases of ideation through mobile voice-memo, video, photo, and notes.

On the other hand but still of interest, A admits to responding to messages from collaborators during long meetings or that A is not directly involved:

> *You know, they've got a question about a specific interaction point and then I'll just be able to quickly go "no didn't mean that", "I meant this"*

Mobile technology offers A the possibility of ubiquity and increased efficiency.

THE KNOWLEDGE IT CREATES

The notion of collective knowledge (collective intelligence) is more important in this configuration through collaborative sound messaging (knowledge conversion and transfer) that allows for more human interactivity despite distance or physical absence, and is inclusive (explicit knowledge) when in the same space. In this case, we assert that mobile technology plays an important part in knowledge sharing, conversion, and externalisation (KAs Experiential and Systemic, Philip, 2018, p. 123).

Participant L

THE MAIN TYPES OF USE

L works as a freelancer in mediation and digital cultures and event organisation. For L, it is important to have a portfolio that reflects L's professional skills and qualities. For clients, L often needs to intervene in the creation or update of content via social media. In e-marketing, L needs to use specific technical functionalities that only mobiles can provide (mobile-first). Furthermore, for L, time management is often dependent on the reactivity or inertia of their customers, which often impacts L's personal life.

THE PRACTICES IT ENABLES

As a Community Manager, L's primary practice is to manage the social networks of many clients. The work includes creating content, planning content distribution, and measuring impact. For L, writing text or creating gifs is easy on mobile and it allows L to quickly set up mood boards on *Pinterest* or *Instagram*. Many of these tasks are not available on a computer with only mobile-first apps enabling these functionalities. Additionally, as a freelancer, L manages meetings notes and appointments via a shared calendar and citing L, mobile technology 'makes life easier' in this respect thanks to a myriad of native or freely downloadable apps (a significant reduction of the operating costs) and their affordances. The smartphone allows L to create or

manage tasks during a low time (transport, waiting room, waiting for a client to answer). Considering the weight and size of mobile devices and the intuitive apps ecosystem, mobile technology provides L with a certain lightness of being:

> *The creation of a document is deeply influenced by all the images and inspirations that I daily glean from my smartphone. So it's done in an unconscious way however my inspiration is on my smartphone.* (translation by the author of: *La création d'un document est extrêmement influencée par les images et les inspirations que je glane au quotidien sur mon smartphone. Donc ça, ça se fait de manière plus inconsciente mais mon inspiration c'est sur smartphone que je l'ai.*)

The mobile-specific practice in the ideation phase that includes the elaboration of drafts, the visualisation of ideas or mood boards on *Pinterest*, or *Instagram* enables L to create or record aspirations or inspirations before embarking on a more substantial task on a laptop.

Furthermore, the smartphone supports quick responses to many requests, especially email:

> *It's always switched on and almost always in my hand.* (translation by the author of: *Il est toujours allumé et quasiment toujours dans ma main.*)

Finally, another mobile unique practice is the experience of using the device itself: thanks to touch screens, the boundaries between the intellectual and the physical are abrogated. According to L, the dissociation between screen and keyboard, between vertical and horizontal surfaces, does not exist anymore since everything is on the same level and everything is merged on the same plane (the smartphone's screen):

> *The tactile dimension means that one more of my senses is also involved. And as a result, the experience is more complete.* (translation by the author of: *La dimension tactile fait que j'ai un de mes sens sollicité en plus. Et du coup, l'expérience est plus complète.*)

> *THE KNOWLEDGE IT CREATES*

The knowledge is more unconscious (tacit) for L: mobile technology is more involved in inspiration, particularly in the creation of mood boards (creation), or content for social media (sharing), and time management (production, distribution).

Finally, L speaks of multidisciplinarity thanks to the use of smartphone devices which allow users to access different fields of data, or even expertise, very quickly and at a fingertip. Therefore, we assert that mobile technology enables a certain form of universal knowledge (digital culture) (KAs Conceptual and Systemic, Philip, 2018, p. 123).

Participant C

THE MAIN TYPES OF USE

C works mainly as a web developer for clients in the cultural or artistic fields. Principally, C uses smartphones to test websites that C created (responsive design). C also uses a mobile device to find information, other online projects (inspiration or reference), or *Google Maps* when travelling. Finally, mobile technology allows C to monitor the evolution of C's creations over time and to keep in touch with clients, especially for specific requests, problems, or technical breakdowns (server, update):

> *When I'm on the move, in public transport, it allows me to continue to monitor my emails and to answer them.* (translation by the author of: *Quand je suis en déplacement, dans les transports en commun, ça me permet de continuer à monitorer mes mails et y répondre.*)

THE PRACTICES IT ENABLES

C has a very pragmatic approach to website creation. According to C, a web simulator never equates to the real experience via a smartphone. Hence, mobile technology enables C to directly test actual functions and processes. It also provides C with a certain autonomy by allowing C to be both the creator of a website and user via the smartphone. Having multiple roles allows C to work in an agile mode and to alter prototypes very quickly (iterations), expressing one of the fundamental characteristics of the design thinking method, focussing on user or client experiences.

The smartphone lets C know when a client or collaborator is online, allowing C to reach the person immediately. C can see the status of contacts (if they are online) in applications such as Instagram, *WhatsApp* or *Messenger* and consequently, know who is available. Therefore for C, the smartphone contributes to and supports their interaction and communication in project management.

Mobile usage expresses an affective aspect to the relationship between the person and the device through the exchanges it facilitates, for example, C compares a smartphone to a pet that needs to be looked after regularly:

> *You have a kind emotional bonding with your mobile... Yes, you have to look after it.* (translation by the author of: *T'as un rapport qui est un peu affectif avec ton mobile... oui, tu dois t'en occuper.*)

Finally, C's smartphone allows C to manage highly confidential information with ease and serenity. The device gives C 24/7 access to a digital safe containing all the logins and passwords for all the client websites. Since C always carry their mobile, even while on holiday, C is always able to respond to customers if there is a problem or urgent need:

In my main mobile terminal, I have a kind of encrypted wallet that allows me to store all my website passwords, ftp access, ssh etc... In fact, this allows me, if I have a bug on a website and even if I don't have my computer at hand, to be able to check the issue at least. (translation by the author of: *Dans mon terminal mobile principal, j'ai une sorte de portefeuille crypté qui me permet de stocker tous mes mots de passe de sites Internet, accès ftp, ssh etc... Ce qui me permet en fait, si j'ai un bug sur un site, même si je n'ai pas mon ordinateur sous la main de pouvoir intervenir à minima quoi.*)

THE KNOWLEDGE IT CREATES

For C, the smartphone reduces the gap between practical and theoretical knowledge by facilitating the iterative phase of ideation. The notion of network knowledge is important in this case where, according to the participant, mobile technology facilitates access to a zapping culture (a particular form of knowledge). So, mobile technology provides a wide field of possibilities despite there being a lack of depth of knowledge. We assert that mobile technology fosters a new form of knowledge (KAs Experiential and Conceptual, Philip, 2018, p. 123), called *skurfing* (a fusion of two words, 'surfing' (Internet) and 'skipping' the information). We describe *skurfing* in Section *4.3.2 Cultural Observations*.

Participant N

THE MAIN TYPES OF USE

N works as an arts and culture event organiser. N primarily uses a smartphone to check social networks, bank accounts, and the weather because N travels by bicycle as much as possible. To a lesser extent, N uses a synchronised diary shared with collaborators and takes notes during meetings. Additionally, N works as an actor and songwriter, using mobile technology in the creative process.

THE PRACTICES IT ENABLES

For N, who is often on the move geographically, the GPS function of the smartphone is very important. The function allows N to find their way around and minimise the wasting of time.

It is interesting to note that N does not have a personal laptop and that the smartphone has become an extension of N's workstation. According to N, mobile technology enables better time management, especially between their personal (e.g. doctor's appointment) and professional life:

Yeah absolutely… well, to stay available is very important for me in relation to work. (translation by the author of: *Ouais tout à fait… bon, de rester disponible c'est super important pour moi par rapport au travail.*)

Or

When I'm in a meeting, and I can only listen with one ear, I take my phone and I read my emails and I see what I can deal with right away. (translation by the author of: *Quand je suis dans une réunion ou quoi, et que je peux écouter d'une oreille, je prends mon téléphone et je lis mes mails et je vois ce que je peux traiter tout de suite.*)

In N's theatrical practice, N's smartphone becomes a tireless substitute for a stage partner while rehearsing lines. The smartphone voice memo records the dialogues except for N's lines that are left silent. Thus, N can learn and practice their role at any location or environment. In addition, N can record their own lines also using the voice memo, allowing N to be more aware of intonation and errors, and to improve their final performance:

Yeah, and you can do it anywhere: in your car, or in the bath, or you can let the thing run while… while you're doing… that's great. (translation by the author of: *Ouais et tu peux le faire n'importe où : dans ta voiture, machin ou dans l'bain ou tu peux laisser le truc courir pendant que… pendant que tu es en train de faire… ça c'est super.*)

In another creative field, the smartphone allows N to record new ideas for songs (melody, lyrics) composed and performed for some of the organised events:

And then I started singing "I lay eggs all day…" and I took my phone and started singing. So, I sat down on a bench. I thought "Woohoo, I've got something" and I started to sing and… and then I visualised some keys. (translation by the author of: *Et là, j'ai commencé à chanter "j'ponds des oeufs toute la journée…" et j'ai pris mon téléphone et j'ai commencé à chanter donc je me suis posé/e sur un banc. Je me suis dit "hola je tiens un truc" et j'ai commencé à chanter et tout… et après j'ai vu plusieurs notes.*)

THE KNOWLEDGE IT CREATES

According to the participant, the mobile phone is a kind of memory prosthesis, using words like 'very spontaneous' and with 'a tendency to forget certain information or ideas very quickly', and records and provides access to 'factual knowledge' when or where it is necessary. Moreover, within the framework of

theatrical practice (rehearsal), another form of knowledge is expressed that is in close connection to propitious moments, the mental availability of a performer.

Finally, between ideation and production (event, performance or song), mobile technology can foster the creative process through the sharing of ideas, concepts, or mock-ups (*exploration*) with a group of friends or trusted people, who may validate production or further development (*exploitation*).

We argue that mobile technology enables a flow state for knowledge creation (KAs Experiential and Routine, Philip, 2018, p. 123).

Participant H

THE MAIN TYPES OF USE

H works in freelance public relations and as a writer. H uses the smartphone to stay connected to others and stay in touch with trends:

> *It's about establishing and maintaining relationships and kind of connecting the dots so that I can help connect people to their different passions and niches and projects.*

H uses mobile devices to create visual content (photos, short videos) or textual content for blog posts. H often uses the voice memo function of the mobile to take notes during meetings and transcribe them via *Google Docs* or the video function to record testimonies and feedback during workshops or events.

THE PRACTICES IT ENABLES

H's work involves a lot of interaction and H uses the mobile video function to interview people. In this case, the smartphone is a less intrusive tool than a traditional camera, conveying proximity and authenticity to the interviewees, who therefore are less intimidated. Videos is mainly used to keep on record spontaneous impressions and sometimes to illustrate the state of the art before any decision-making.

In the context of workshops that H runs, the mobile phone enables quick and easy file exchange (notes, photos, videos) via *AirDrop* or *Bluetooth*. Moreover, the smartphone allows H to immediately and spontaneously edit documentation from the moment. According to H, mobile technology is intuitive, less complicated than a laptop (affordance), and allows the capture of a multi-dimensional environment (sound, vision, and topographic –GPS), without stress:

This may sound strange but it just has taken a lot of the sort of anxiety out of workflow because the steps are so simple.

The smartphone allows H to switch between tasks that require different types of concentration or mental availability. In addition, the smartphone introduces a playful notion into the creative process and into the management of professional activities, such as monitoring news or advertising campaigns:

It just feels so much more spontaneous even though it's very thoughtful and deliberate. Yeah... there's a lightness of touch, a sense of energy, and almost play as well.

Finally, mobile technology provides H with a unique collaborative aspect, namely the sharing of information via social media associated with a tag. The individuated tag feature allows the tagged person or entity (group, association, institution, or company) to respond directly and share received information as well. The tag function developed specifically for mobile technology is unique and, due to its simplicity (affordance), creates a snowball effect when information is shared by multiple parties.

THE KNOWLEDGE IT CREATES

In this circumstance, the simplicity of applications and functionalities on smartphones offers a reduction in the amount of time needed to learn procedures:

Well it's just all in one and it just... (showing his/her smartphone), *it's right there so it's so easy.*

In this context, like in Hospitality, knowledge is recorded immediately and can be searched for anywhere, anytime, and potentially by anyone in the world.

Instead of using categories, fields, topics or subjects, hashtags provide a means of organising knowledge on smartphones with keywords. The smartphone brings a new ontological dimension to knowledge enabling very specific indexing of knowledge in relation to one or more groups (CoP or CoI). In a way, the smartphone fosters the development of tailor-made knowledge.

We assert that mobile technology facilitates improved productivity (KAs Routine and Systemic, Philip, 2018, p. 123).

To recap, we have analysed insights into the effects of mobile technology as a tool and a means to the creation of new collaborative spaces and alternative business practices, encapsulated as the key findings listed in Table 4.2. These findings are explicated in the following chapters and in *Appendix 10*.

_____

T: Mobile technology brings a new sensory dimension to knowledge.

V: Mobile technology supports *fractal* and above all *contextual* knowledge.

M: Mobile technology best facilitates knowledge created through time.

A: Mobile technology plays an important part in knowledge sharing, conversion and externalisation.

L: Mobile technology enables a kind of universal knowledge (digital culture).

C: Mobile technology fosters a new form of knowledge.

N: Mobile technology enables a flow state for knowledge creation.

H: Mobile technology can facilitate better productivity.

_____

Table 4.2 Conversations key findings.

4.3.2 Cultural Observations

The role of digital technologies in driving the innovation process has increasing support through international public policies, including in Australasia and Europe. The researcher, who is involved in the use and production of mobile services and products, observed the exponential increase in the capability of mobile devices since 2007 (1st generation iPhone - 'original', or 2G) and especially from 2009 (3rd generation iPhone - 3GS), then the expansion of the smartphone with other brands from 2013 (5th generation iPhone - 4s; and other brands devices). Over this period, he has observed an anomaly between recurrent creative and organisational practices and routines and practices on desktop computer use. Sætre & Van de Ven (2021, p. 4) said that 'by anomaly we mean a novel or unexpected phenomenon that cannot be explained or is poorly understood by existing knowledge', so the researcher started to look at the impact of mobile technology practices on organisational management in Aotearoa New Zealand CIs. Abductive reasoning was then applied to a sensemaking process (Weick, 1995), involving four key stages, to 'observe anomaly, confirm anomaly, develop hunches, and evaluate hunches' (Sætre & Van de Ven, 2021, p. 6). The process can be used to decipher complex phenomena and as described by Sætre & Van de Ven (2021), 'a variety of methods are useful for undertaking this exploration. They

include information-gathering activities drawing on personal experiences and direct observations of how an anomaly unfolds in a particular context, as well as talking with people who experience the anomaly through casual conversations, interviews, or group meetings. Reviewing the literature to determine the scope, prevalence, and context of the anomaly is also needed' (p. 13). Thus, we realised that the Aotearoa New Zealand group had some key traits such as having an Anglo-Saxon culture with a pragmatic heritage (farming mainly), belonging to the OECD but with a unique post-colonial legacy (Māori and Polynesian people) and being tech-savvy due to its remote geographical location (the antipodes of UK-Europe). A genuine enthusiasm in the collaborators to share their stories, mindset, spontaneously and authentically was obvious.

While our focus allowed us to unpack complex processes and to reveal weak signals, unconscious patterns associated with mobile technology and its use in a specific environment (Aotearoa New Zealand), we became aware that the generalisability of our findings to other organisational settings will need to be established in future research. For this reason, we took up a professional opportunity in France, also part of the OECD, to conduct further examinations with a group of CI experts. During this second phase (Figure 2.4, *Appendix 6*) , cultural similarities and oddities were observed, for example the France group was far more concerned about privacy and potentially negative aspects. Also, in the use of language, the French people were reluctant to share their personal encounters and feelings directly. They used more metaphors and a negative grammatical construction. Two cultural perspectives encountered are outlined below.

[*Fig. 2.2* – Appendix 6. Please scan the QR code with your mobile device, or check https://bit.ly/2RRwcqz]

[Participant N – France]

Et en même temps je n'aime pas le fait que, voilà au travail par exemple si on te croises pas on ne peut pas t'appeler et on ne t'emmerde pas et tu peux rentrer peinard chez toi – And, at the same time, I don't like the fact that if someone doesn't meet you at work, for example, s/he can't call you and s/he doesn't bother you then you can go home hassle-free, translated by the author).

[Participant T – Aotearoa New Zealand]

Yeah, the other thing is just the built-in sensors, so your gyroscope, your GPS, you know, that the sensors that are built into your mobile devices, they allow you to interact with the real world, which, you know, you can't really do with a laptop, or a desktop [...] So it's a proof that you're actually somewhere that you say you were, doing a meeting, etc, you were not skiving off somewhere.

Ultimately, the findings of autonomy and interactivity are similar between both interviewees but the general ethos is almost antinomic.

Beyond geographical borders, the Internet (World Wide Web AKA www) has become an international territory where people can connect and exchange 24/7 through a digital (online) space. Within this context, Jenkins (2006) defined participatory culture as a culture in which 'consumers are invited to actively participate in the creation and circulation of new content' (p. 290). So, mobile devices fostered the notion of prosumerism, which consists of the synchronicity between producing and consuming content or culture. Also, the character of affordability and immediacy of mobile devices lessens the importance of the notion of the time difference and allows asynchronous collaboration. The use of technologically-mediated collaboration is an influential tool in social relationships and improving cross-cultural understanding (O'Brien et al, 2007). Furthermore, Botha et al. (2009) claimed that mobile devices play an important role as 'mediator in the development of intercultural competencies and communication skills'. Consequently, mobile technology enables a digital form of collective intelligence that 'extends everywhere and is constantly evaluated and coordinated in real time' (Alvaro, 2014). The ubiquity of communication generates ecosystems of ideas that support the digital culture that is navigable through its semantic relations (Alvaro, 2014; Levy, 1999) as visualised below by Spivack (2004):
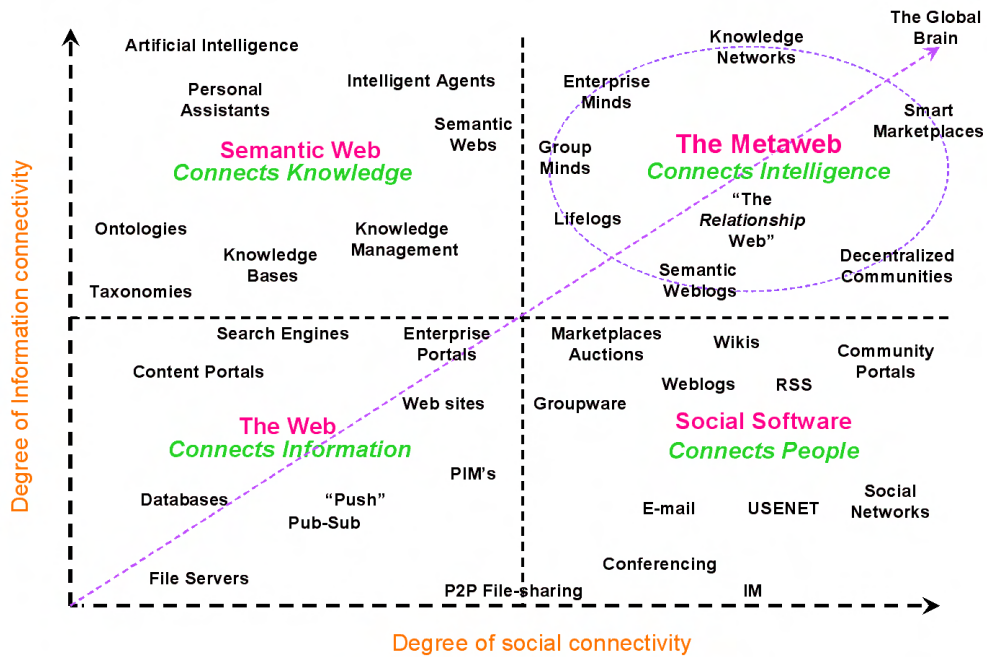
The following diagram is another way to visualise the phases through which the Internet and mobile technology evolved and are going. A comparison of the theoretical perspective (3.0 and beyond) and the pragmatic reality (2.5 forward) in relation to technological progress, societal adoption, and practices is illuminating.
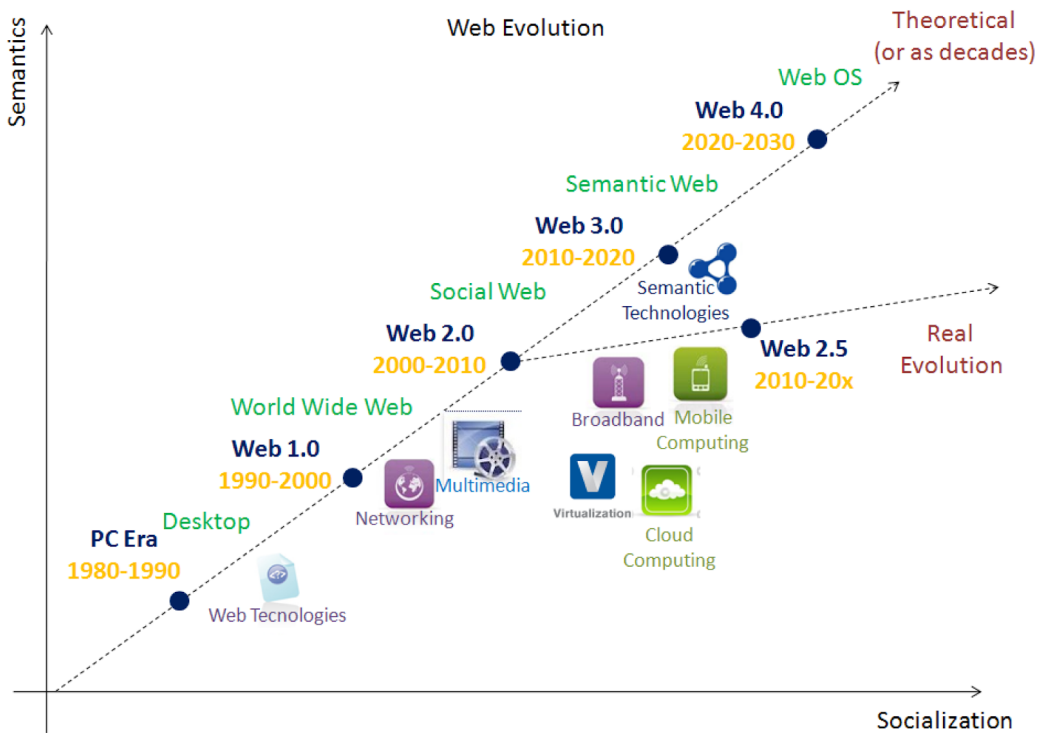
The below *Substitution Augmentation Modification Redefinition* (SAMR) model (Puentedura, 2006), mainly used in education in relation to technology advancement, provides strong cultural parallels and similarities. SAMR is defined as a 'desire for group experience or for collective production or consumption that cannot be fully factored out to the individuals comprising the group' (Throsby, 2001, p. 13). From our observations and analyses of practices, digital culture evolves following the loop of the SAMR model (Figure 4.3), beginning with direct transfer or duplication of current practices online (*Substitution* –Web 1.0), then using online technology to provide with functional enhancement (*Augmentation* –Web 2.0), to employing technology for significant activities redesign (*Modification* –Web 3.0), to designing new experiences that were previously impossible or difficult with pre-existing online technology (*Redefinition* –Web 3.1 or more).
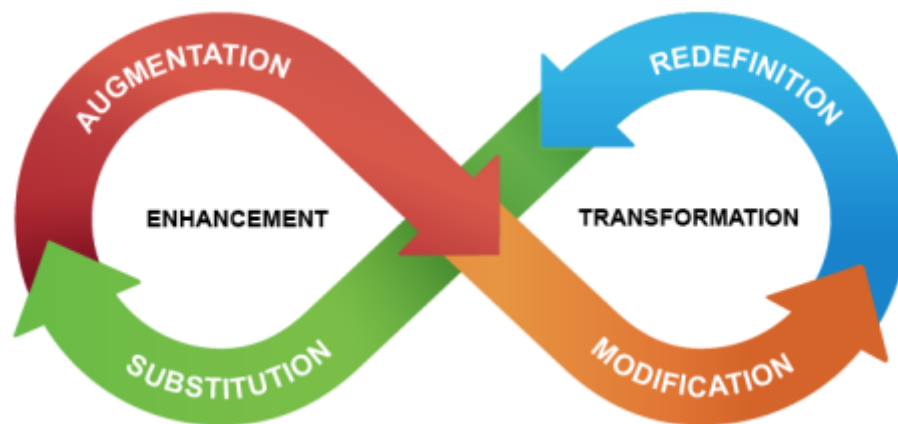
Fig. 4.3 The SAMR cycle. Retrieved from https://bit.ly/3m5V3HO

Consequently, mobile technology prosumers are not only surfing the Internet (www –PC Era, Web 1.0), they also skip from information to interaction (Web 2.0 and more), thus they are *skurfing* (fusion of the previous two words 'surf' and 'skip'). From an anthropological perspective, when reflecting upon the enabled patterns of digitally learned and shared behaviour (education, systems of knowledge) and beliefs of a relatively large group of people online, then the *ba mobile* is a newly identified component of the digital culture that transcends national cultures by bringing connected people together around common passions, missions, values, or lifestyles (Shirky, 2011).

4.3.3. Peculiarities of the *ba mobile*

Beyond being an apparatus for communication only, mobile devices enable co-creative practices in groups and provide the capacity for new and different forms of *ba*, such as *ba mobile*. The characteristics of mobile devices as *ba mobile* are distinguished physically and conceptually. Key physical attributes of the devices include *First Personal Mass Media*, *Always Connected*, *Always Carried* (Ahonen, 2011) and endow a digital equivalent of F2F interaction within the *Socialisation* phase (*Originating ba*), for example, providing functionalities for recording conversations, and exchanges of ideas and knowledge (Serres, 2012; Ferraris, 2016). Thus, the *ba mobile* enhances 'knowledge-sharing benefits of communication visibility by closing the gap between metaknowledge and situated practice' (Anders, 2016, p. 254). Therefore, while original *ba* still exists in some specific cases, mobile technology has shifted the frontier of the *Originating ba* and its F2F requirement.

Conceptually, mobile technology provides users with 'Captures Social Context of Consumption', and most important 'Offers Digital Interface (to the real world)', 'Available at Creative Impulse' (Ahonen, 2011). The *ba mobile* solicits from us a new way of understanding knowledge exchange and sharing, it introduces a new paradigm (Vial, 2013; Nova, 2018). The *ba mobile* fosters through a third-space, a mobile *middleground* (Cohendet et al., 2010) between local and global (*glocal*), between national and international (borderless, ubiquity), and between F2F and online (*phygital*) by virtue of easy (affordances) and authentic (rich-media) social interactions on the move (ATAWAD).

Since past instances of mobile technology no longer exist or may be soon obsolete, studying them presents difficult methodological challenges. The critical challenge is to look beyond the formal description of events for understanding how they are observed and interpreted by actors in context. Accordingly, a major limitation of contemporary mobile technologies, especially for SMEs, is the lack of understanding of its evolutionary dynamics. Looking beyond the static vision proposed by most research and in the light of this chapter's findings, it becomes important to take into account the dynamic and multi-level nature of mobile technologies (Serres, 2012; Ferraris, 2016; Nova, 2018) and the structuring role of dynamic capabilities (Ahonen, 2011; Vial, 2013; Dudézert, 2018) that we defined as the *ba mobile*. This nature inevitably involves evolution, change and variation in the process of mobile technologies, in the levers and brakes of mobile technologies and in the long-term consequences for the organisation. The *ba mobile* effects may be particularly important for SMEs, which have a particular relationship to time. For example, Suire et al. (2018) talk about unlocking practices via nodes, i.e. through the nodes, the nexus, the network and also the links, the bonds, and the ties created

between individuals. In fact, these flows of interactions between structure (individuals, organisations, groups), space (Amin & Cohendet, 2004; Crespin-Mazet et al., 2019) and ecosystem (Mercier-Laurent, 2011; Evans, 2016), allow for a certain amount of knowledge and creativity to be set in motion (Figure 3.3).

[*Fig. 3.3*. Please scan the QR code with your mobile device, or check https://bit.ly/2WQyLPC]

In parallel, Dudézert (2018, p. 32) defines that remote work covers a wide range of work practices: from home-based work to remote-local work (space close to home and avoiding travel) via to nomadic work (frequent changes of the workplace) and its 'mobiquity' (mobile-ubiquity –Marzloff, 2013, p. 48). Consequently, mobile technology can be perceived as 'creative' or 'poetic' (Graeber, 2015) and, according to Dudézert (2018, p. 30) 'would be opposed to 'bureaucratic' technologies set up to manage, rationalise collective action' (translated by the author). Dudézert even claimed that this kind of technology would be 'the instrument of a liberation of the creativity of the actors, a creativity hitherto stifled by procedures and the automation of work, they would give 'life to impossible and crazy dreams'.' (translated by the author, p. 30). We claim that the *ba mobile* provides such aspirations and inspirations.

In all cases, whether through our French, Aotearoa New Zealand testimonies, for there to be a commitment (network) that allows the development of an ecosystem, the notion of trust is key (individual, CoP or CoI –Wenger et al., 2002) and, from the writings of many authors cited above (Amabile, 1997; Askay & Spivack, 2010; Bartolacci et al, 2016) and our investigation in the different fields, we have defined that mobile technology facilitates the creation of this trust because of the nature of the connected devices (small, fitting in the hand, all the time with their owner), and because of their uses (rich-media, always connected). These results are in line with the evolution of the definition of innovation through ecosystems that are increasingly lenient on digital capabilities and capacities. In Figure 4.4 below, Oruezabala (2017) encapsulates this contemporary trend: from *Ecosystem of Business* (translated by the author –ESA, *Ecosystème d'Affaires*) to *Ecosystem of Innovation* (translated by the author –ESI, *Ecosystème d'Innovation*).
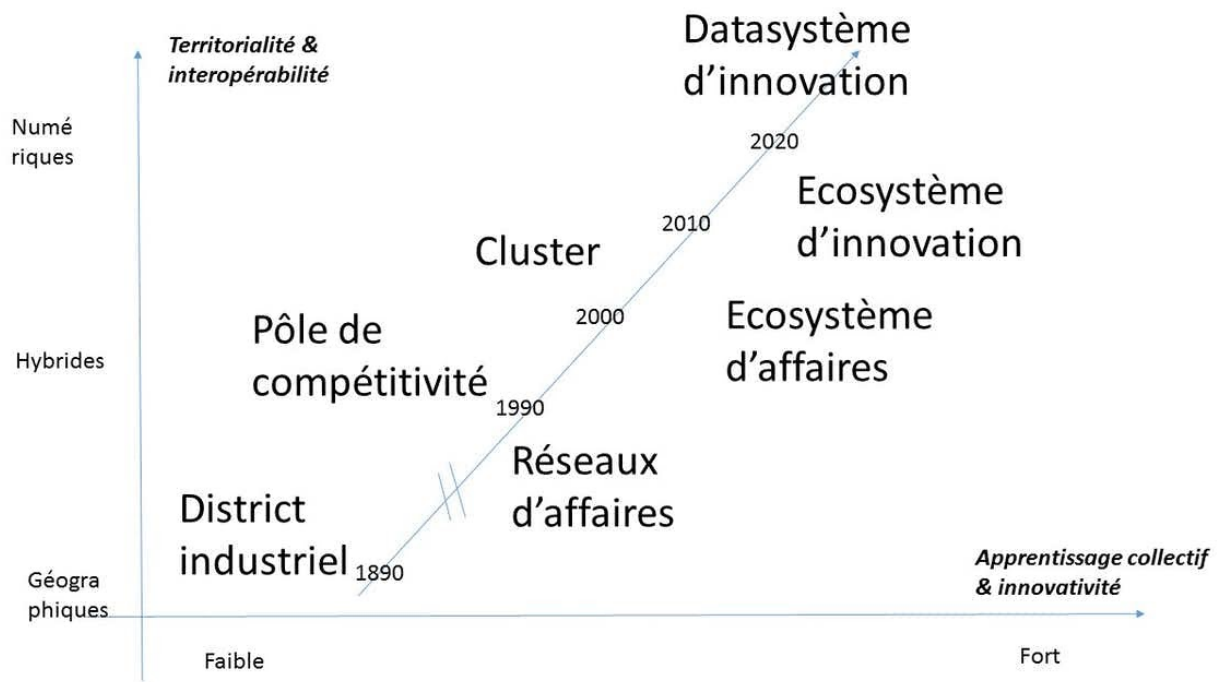
Fig. 4.4 Ecosystèmes d'affaires (ESA) - Ecosystèmes d'innovation (ESI)

The *ba mobile* supports the concepts of *Territoriality and interoperability* (Territorialité et interopérabilité, translated by the author) and *Collective learning and innovativeness* (Apprentissage collectif et innovativité, translated by the author). However, because innovation has a socio-cultural dimension, it is difficult to systematise or control it, but it is possible to influence the process. In this case, mobile technologies play an important role in the translation of implicit knowledge to explicit knowledge (Botha et al., 2009; Anders, 2016), in sharing know-how via various communication methods (rich-media -Bathelt & Turi, 2011; Bhalla et al., 2017) or in exchanging savoir-vivre (value, ethics -Askay & Spivack, 2010; Cavazotte et al., 2014) through immediate, spontaneous, and casual conversations. Therefore, mobile technology enables the development of collaborative innovation via a co-creative space between people and processes (*Appendix 10.*, Figure 3).

[*Appendix 10 – Figure 3.* Please scan the QR code with your mobile device, or check https://bit.ly/36c9CRQ]

Furthermore, the success of innovative engagement through inter-divisional collaboration requires informal social networks linking the divisions. While these inter-divisional networks are difficult to set up because the formal structure strongly constrains their development (O'Reilly III & Tushman, 2011), we have demonstrated that the *ba mobile* enables knowledge transfer and conversion (*Appendix 10.*, Figure 3).

Moreover, Burger-Helmchen et al. (2016) highlighted that Tushman had invited us to 'consider the impact of the web on the nature and pace of innovation' (p. 363, translated by the author). For Tushman, 'the advent of the Internet has shifted the innovation space from the firm to a much larger ecosystem, and the problems that firms will face, even the largest ones, will be to manage relations with these other actors evolving according to different logics' (p. 352, translated by the author). Therefore, we claim that mobile technology has a role in the bridging of actors and knowledge, enabling the fluid production of ideas and fostering collective innovation.

Mobile technologies can help to overcome resource and time limitations often present in SMEs. By acquiring external skills and taking advantage of the lower cost of digital exchanges that only require time versus the more substantial financial cost of software, infrastructure, and training, mobile technology makes it possible for SMEs to foster collaborative strategies. Adoption of the *ba mobile* mitigates the tension between SME short-term objectives and the long-term vision and opportunities of previously unexplored practices (de Certeau, 1984). The *ba mobile* can create and support collective dynamics and energies fostering new business practices.

This research demonstrates that innovative practices with mobile technology can extend beyond organisational boundaries through space (geolocation), and time (evolutionary dynamics).

In the next chapter, ethnographic studies of organisational creativity enhanced by mobile technology yield complementary insights on these issues and further investigation of the evolutionary dynamics of mobile technologies and their process (trajectory), including the consequences on the organisation and its performance are discussed.

CHAPTER 5 – A Mobile Networking Approach to Collaboration and Innovation

'The diversity of ideas produced during a creative process is based on the cognitive flexibility of team members' (Amabile (1983), in Dampérat et al., 2019).

5.1 Preface

The digital transformation of business models has a substantial impact on the way people collaborate and deal with time. If not carefully considered in advance, then new models of collaboration and forms of time management (*project* mode) can contribute to a decrease in the value of human and relational capital. Unless existing (in-situ, office-based, location-oriented) benefits of the history, culture, and operations of teams (routines, trust, etc.), then it is possible that misalignment with management objectives to operate remotely online and team objectives (individual and collective) will ensue. Furthermore, 'the concept of collaborative overload, which specifically addresses downsides, unintended or side-effects of collaboration technology, has gained prominence' (Lansmann & Klein, 2018, p. 2). However, Uzzi & Spiro (2005) suggested that 'interactions between global and local network' could provide support for 'the sharing of ideas, soft information, and resources' (p. 463), and enable creativity. While Anders (2016) said that 'usage of emergent media facilitating variable levels of synchronicity and multiple, overlapping conversations also have a curvilinear relationship with productivity' (p. 230).

In relation to social collaboration and communication enhanced by technology in general and mobile technology in particular, Anders (2016) described 'four essential functions and performance factors: *Knowledge sharing* from diverse sources and knowledge diffusion across organizational boundaries; *Social engagement and social cohesio*n as enabled by information symmetry and individual relationships—especially for virtual teams; *Collaboration practices* that maximize the contributions and interconnectivity of all team members; *Attention allocation across multiple tasks*, projects, and conversations' (p. 230). Therefore, it is important to ask how mobile technology could substitute, complement, or supplement an emergent management system that encompasses old (analogue) and new (digital) models? Can mobile technology foster open collaboration in or across industries? Following Dampérat et al.'s (2019) findings of 'the fluidity of the production of ideas and the diversity of the ideas produced' (p. 5, translated from French to English), the following paper (Section *5.2*) examines and contributes to an understanding of the use of mobile technologies

in the creative sectors. The paper covers interdisciplinary literature on mobile technology, with a specific focus on information and learning science. The paper discusses interviews about mobile use in the creative sector in Aotearoa New Zealand and France to delineate key attributes of collaborative and innovative practices and their implication for knowledge management and organisational dynamics.

The next section of this chapter is composed of one publication, which argues the following sequence of ideas:

[TECHNOLOGY]   [INTERACTIONS]

knowledge management **>** international practices **>** cognitive/social processes **>** (co)creation **>** m-Collaboration

[NETWORK]   [COLLECTIVE INNOVATION]

5.2 *Being Mobile: A Call for Collaborative Innovation Practices?*[9]

5.2.1 Keywords

Collaborative Innovation, Knowledge, Mobile Technology, Management, Organisation

5.2.2 Abstract

5.2.2.1 Purpose

The purpose of this research is to examine mobile technology as being a key apparatus and interface for collaborative innovation, which allows organisations to develop their information ecology.

5.2.2.2 Design/Methodology

The qualitative research was performed by in-depth interviews, observations, and field notes. The eight main interviews are supported by an interdisciplinary narrative literature review of knowledge management and associated fields.

5.2.2.3 Findings

This research validates the following propositions: i) mobile technology can offer users timely information, ii) mobile technology can foster collaboration beyond physical and organisational boundaries, and iii) in general, mobile technology enables a wider amount of interactions between people. Thereby we draw some implications about the knowledge management of creative (and non-creative) workers.

5.2.2.4 Research Limitations/Implications

The collected data sheds light on how organisations and individuals positioned themselves regarding mobile technology co-creative practices before the COVID era. Therefore, it shall be pertinent to further investigate these findings through a quantitative approach in order to better ascertain path models and to strengthen the new results with another qualitative perspective, in the post COVID era.

5.2.2.5 Practical Implications

The research highlights how mobile devices are facilitating collaborative innovation practices by improving management decisions, enabling new business and operating models, developing a flow of ideas inner/outer an organisation and fostering the ability to make innovation.

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[9] Antonczak, L. & Burger-Helmchen, T. (2021). Being mobile: a call for collaborative innovation practices?. *Information and Learning Sciences*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/ILS-02-2020-0035

5.2.2.6 Social Implications

Mobile technology transforms our way to work (knowledge creation and conversion) and it changes the relations between collaborators in a working environment (beyond physical boundaries). This research deciphers how a creative and decision-making person can change his/her work schedule and routines based on the use of mobile devices.

5.2.2.7 Originality/Value

The added value of this transdisciplinary research is that it improves research on collaborative innovation and collective knowledge by revealing three pertinent characteristics of mobile technology: enabling quick decisions; connecting with a *glocal* network and fostering collective creativity. It also creates a bridge between the fields of Education and Business.

5.2.3 Introduction

'Globalization has resulted in increased inter-firm networks' (Carayannis & Clark, 2011, p. 205) and 'collective knowledge' (Pont, 2013; Levallet & Chan, 2019). Therefore, remaining 'spectators' of the trends is no longer an option for any enterprise or socially-oriented business, and their ability to quickly connect intangible resources could be of bigger importance than owning skills by 2030 (France Stratégie, 2017). Additionally, Anderson et al. (2001) define creativity as one of the skills more than necessary in the century of the knowledge economy. In this context, as technology ineluctably grows, the boundaries that separate stakeholders and organisations become blurrier (Gomes & Gomes, 2009), allowing for more flexibility and freedom, and inciting more individualism and entrepreneurship, predominantly among millennials and GEN-Zers (Bhalla, Dyrchs & Strack, 2017). The relationships that are extended beyond the limits of the organisations are precious to attaining and disseminating knowledge, and 'knowledge is the impetuous for communication' (Carayannis & Clark, 2011, p. 203) in order to foster 'social capital' and to thrive 'cultural knowledge' (Levallet & Chan, 2019, p. 182). This situation is definitely a new challenge for management: understanding interdependence; catalysing local and global energies (Ollila & Yström, 2016), rather than trying to predict; control, invent, and bring to life an organisation adapted to the needs of fluidity, cross-fertilisation and the production of creative wealth, or knowledge value.

This exploratory research proposes to examine mobile technology (Jones & Marsden, 2006; Ahonen, 2011) as being a key apparatus and interface for collaborative innovation (Demil & Lecocq, 2012; Suire et al., 2018),

which allows organisations to develop their 'information ecology' (Nardi, 1999) through a dynamic sense of what is inside and what is outside their boundaries. Said differently, our key intention is to explore and define how mobile devices (smartphones, phablets or tablets) can enable co-creative practices notwithstanding formal structures and systems.

In the first section, we outline some relevant points from existing literature reviews with regard to creativity along with knowledge management and organisational knowledge dynamics. Within the interdisciplinary narrative literature review (Baumeister & Leary, 1997), we also consider the nature and current needs of the environment for knowledge creation and conversion (Sawyer, 2008) as well as organisational 'knowledge retention and/or knowledge loss' (Levallet & Chan, 2019), and highlight several technological enabling conditions (Makri, 2017; Levallet & Chan, 2018; Cheng et al., 2019). In the second part, we introduce the methodological and qualitative approach used for our analysis and findings, as well as their interpretations. We will then propose some avenues for further research. Finally, we conclude with our contribution to new practices in collaborative innovation with respect to mobile technology, and possible directions for additional investigation.

5.2.4 Literature Review

Our discussion starts with some purposeful excerpts of pertinent literature reviews with regard to the field of creativity and knowledge management (Gibbons et al., 1996; Nag & Gioia, 2012; Levallet & Chan, 2018), and organisational knowledge dynamics (Amabile, 1997; Cohendet et al., 2018; Glaser, 2017); new consideration for cognitive and social processes (Sawyer, 2005; Levallet & Chan, 2018; Presicce et al., 2020); interactions and collaboration amongst people (Makri et al., 2015; Slavich & Svejenova, 2016; Canïels et al., 2017) via technology in relation to collective and innovative practices (Demil & Lecocq, 2012; Suire et al., 2018; Levallet & Chan, 2019).

5.2.4.1 Creativity and Community of Practice (CoP)

Scholars identified various types of knowledge exchange and impediment (Paulin & Suneson, 2012; Makri, 2015), creation amidst several eclectic modes (Nonaka et al., 2000; Amin & Cohendet, 2004) and transfer mechanisms (Levallet & Chan, 2019; Hall et al., 2020). In this interdisciplinary examination, our focus is on knowledge *lato sensu* in Knowledge Intensive (KI) environments. In parallel, some researchers identified that another factor of success for organisations lies in the competencies of their local, national or international

Communities of Practice (CoP) (Wenger, 1998; Nardi, 1999; Cohendet & Simon, 2008). By CoP, we refer to the seminal definition of Lave & Wenger (1991) which gives members, federated ad-hoc around some specific area of knowledge, a sense of joint enterprise and identity. It also involves developing a set of relationships over time and developing communities around things that matter to its members. The spur of the moment aspect can be critically important at a time of globalisation, and international competitiveness (Martin-Niemi & Greatbanks, 2010; Makri et al., 2015; Levallet & Chan, 2019). Mobile technology 'enables the user to acquire, transfer and diffuse information and knowledge instantly, which creates value-added benefits for executives' (Carayannis & Clark, 2011, p. 232). And 'the enabling context is composed of practices, situations, and processes, and offers learners opportunity to develop and apply deep understanding in the discipline' (Glazewski & Hmelo-Silver, 2019). Hence, we infer that:

Proposition 1 (P1): mobile technology can afford users timely information.

Besides, in order to grasp how knowledge is managed within an organisational context other scholars (Allen & Cohen, 1969; Cecere & Ozman, 2013; Cheng et al., 2019) adopted a network approach that highlights the complexity of the possible connections beyond a specific environment, across the globe, and through *collective knowledge* which 'encompasses social capital (the intellectual capital embedded in relationships) and cultural knowledge (i.e. a broader view of how things are done in the organization or whom to contact for a specific project question' (Levallet & Chan, 2019, p. 182). However, distinctive communities and actor networks also suggest that the powers of context — spatial and temporal — should be placed at the centre of any theorisation of knowledge formation (Bratianu, 2010). Essentially, the network and its implied interactions bring to light a 'complex maze of creativity' (Cohendet & Simon, 2008, p. 5). Thus, it is important to explain further the ad-hoc constitution of networks and CoPs mainly composed of individuals, groups or teams, in specific locations for a certain time.

Therefore, we propose to zoom into the structure of a group/team, and its influence, in relation to some collaborative innovation (Demil & Lecocq, 2012) and 'collective knowledge' (Levallet & Chan, 2019) principles in order to better under the theoretical and practical implications of some networks and CoPs. Based on Anderson et al. (2014) findings, Slavich & Svejenova (2016) identified the following factors which influence innovative practices and creativity: 'team structure (task and goal interdependence) and composition (diversity), as well as team climate (i.e., participative) and processes (information exchange, problem-solving, and conflict management)' (p. 238). Furthermore, Carayannis & Clark (2011), who referenced Foster & Ford (2003), advanced that leaders, and decision-makers, 'need to tap into other's hidden knowledge through

connection building (networks), creativity, and discovery' (p. 229). Moreover, in line with Makri et al. (2017) who defined value creation as a result of encountered information thanks to technology and its ability to enhance and capture information experiences, Levallet & Chan (2018) further advanced that organisational structure, culture and performance can be enhanced by digital capabilities. Additionally, Cheng et al. (2019) defined that some 'computer-supported collaborative learning' tools can enable inter mutual problem-solving 'without restriction of time and place' (p. 489). Corollary, we conjecture the following:

> *Proposition 2* (P2): mobile technology can foster collaboration beyond physical and organisational boundaries.

Ergo, we discern that there is a pattern focusing on diversity, whereas in actors' profiles, in ways of exchanging information or sharing knowledge (Cochrane, 2010; Hall et al., 2020). Moreover, one of our recurrent findings within the interdisciplinary literature refers to Tuckman's model (1965), and the importance of having diversity amongst collaborators, as well as a 'space to breath', which can be reinforced by an 'organic rather than mechanistic' structure via 'an interaction between individual and work situation at different organizational levels' (Woodman et al., 1993, p. 302) in order to increase the chances to attain relevant and/or pertinent creative outcomes (Presicce et al., 2020). While, Ford (1996) identified new emerging approaches to organisational creativity through 'sensemaking processes, motivation, knowledge, and skills', Nardi (1999) singled out 'collective participation in shared and value activities' in order to find a balance in motion within a 'healthy ecology of information'. Anderson et al. (2014) conceived creativity and innovation as part of an overall equivalent operation, which resulted in connecting them concurrently. Hence, on the one hand, collaborative innovation requires managing the socially distributed knowledge amid a borderless territory (Nardi, 1999), involving greater multidisciplinary collaboration and problem-oriented and consequently the co-creation of knowledge production (Gibbons et al., 1994; Huizingh, 2011). On the other hand, DeFilippi et al. (2004) claimed that many organisations are trying to solve the predicament between creativity and efficiency by separating the creative work units from the routine ones. Additionally, Alter (2010, p. 367) defined organisation as being the result of standardising, planning, scheduling, and coordinating, which consists in reducing uncertainty while innovation means exactly the opposite. The paradoxical notion of the logic of innovation is in contrast to those who support the organisational status quo or rationalisation, and it is even more problematic if we look at economic factors such as the level of fixed cost (Teece, 2018).

5.2.4.2 Creativity and Mobile Technology

Beyond networks and teams, within this constant flow of information and interactions, Botha et al. (2009) claimed that 'mobiles activate the notion of prosumer, which consists in the synchronicity of producing and consuming content or culture'. It also expands to intercultural competencies and communication skills, which benefit from the use of mobile phones, as mediators in their development (Cochrane, 2010; Hall et al., 2020). Thus, socialisation through mobile technology is possible and pertinent and can happen beyond geographical location and time constraints (Cochrane, 2010; Cochrane & Antonczak, 2013 & 2015a). Besides, Hamel & Zanini (2014) advocated that easy and effective collaboration on a larger scale is one of the key advantages of mobile technology. For them, mobile technology can spur specific qualities such as a real-time, socially constructed approach to learning, change, and co-creation (Roser, et al., 2009; Cochrane et al., 2014). Furthermore, inside the various stages of the development of a project, information technology plays an important role as a mediator, and facilitator (Fruchter, 2001), gathering people towards the same mindset and the same willingness to engage in productive learning activities (Cochrane & Antonczak, 2015b), and peer learning (Presicce et al., 2020). Mobile technology 'may simply help liberate and unleash the creative genius of individuals and teams by enabling a virtual "omni-presence" and collaborative innovation commons' (Carayannis & Clark, 2011, 202). Withal, Kane et al. (2011) identified four affordances whereby social media support intellectual capital creation. These four affordances represent different ways to engage in collective and open knowledge conversations: *metavoicing* (affordances, less hierarchy), *triggered attending* (immediacy, notifications), *network-informed associating* (pervasivity, metadata), and *generative role-taking* (authenticity, less influence about position/title status). Makri et al.'s (2015) findings of serendipity in relation to information encounters confirmed some of the cited affordances. More recently, Nikolić & Natek (2018) characterised these enhancements as major opportunities for cross-pollination ideas in spite of some *modus operandi* challenges, especially in terms of synchronous and asynchronous coordination toward a deadline. In conjunction, Anders (2016) characterised a preference for flexible variability and dynamic scaling of communication synchronicity—the degree to which communication behaviour is shared and coordinated. Anders called it 'polysynchronicity' (p. 257). This last point steers to the third supposition:

> *Proposition 3* (P3): generally, mobile technology enables a wider amount of cognitive interactions between people.

Thus, referring back to the research question 'how can mobile technology enable co-creative practices notwithstanding formal structures and systems?' and our propositions (P1, P2, P3), the presented literature

review suggests that mobile devices allow new ways to organise knowledge, to work and to recreate linkages, vertical and horizontal partnerships (Ollila & Yström, 2016), and to be able to engage with new learnings at every level through either a network, either a CoP, a group or a team. Exchange amongst peers, colleagues and experts enriches organisational conditions (Pont, 2013; Presicce et al., 2020) thanks to shared experiences and swift information exchanges (Hall et al., 2020). Using 'a facilitating tool in both formal and informal learning environments' (Carayannis & Clark, 2011), namely mobile technology, can result in a dilemma: 'coupling or decoupling creative and routine work' (Cohendet & Simon, 2008, p. 5). Although routine scholars have highlighted the importance of outcomes in routine dynamics, Alter (2010) claimed that the central tension between innovation and organisation is precisely on this matter: 'routine, repetition, landmarks, heritage - all these things allow access to identity and socialization. But the movement destroys these things' (p. 374). By movement, we need to understand networks and/or CoPs' internal/external cognitive interactions. Consequently, according to the original 'Unfreeze – Change – Refreeze' (Lewin, 1947) in relation to firms' strategic changes (Kotter, 1996) and some of its 'messiness' (Ollila & Yström, 2016), we conjecture that mobile technology currently increases and reinforces the notion of 'permanent slush' and it supports individual and group learning scaffolding (Cochrane et al., 2014; Glazewski & Hmelo-Silver, 2019). Aligned with Sawyer's (2005) seminal definition of learning sciences, Carayannis et al. (2013) summarised similar findings by: 'mobile technologies (…) have the potential to change the way business executives communicate, interact, learn, and behave' (p. 444).

The following section concentrates on a qualitative approach, made of eight narratives, their synthesis and their interpretation, and some further avenues for additional, or complementary, research.

5.2.5 Narratives

While there is an extensive body of publications focussing on the practical and utilitarian aspects of mobile technology such as ergonomics, user interface, user experience and applications development (Jones & Marsden, 2006; Ahonen, 2011), this transdisciplinary and exploratory research focuses on the relationships which can exist between workers and organisations. More precisely, this qualitative case study's focal point is to develop an analytical explanation of the role of mobile technology in 'collective knowledge' creation (Levallet & Chan, 2019), a co-creative organisational process. Thus, the preliminary empirical findings detailed in the eight narratives provide grounded support for an initial theoretical framework that explains how mobile technology can enable collaboration and creativity by unveiling some weak signals. To wit, the qualitative

methodology undertaken in this research is supported by an interdisciplinary literature review analysis, a series of narratives via Talanoa's approach (Antonczak, 2020) and, in terms of connecting concepts in a transdisciplinary theoretical framework, we also use an *Enhance Grounded Theory Development* (Gioia et al., 2013, *Appendix A*) coupled with an inducting process model. The various open conversations with the participants aimed at bringing to light some weak signals such as unconscious patterns, latent routines, or subconscious behaviours. Also, Carayannis & Clark (2011) defined that this kind of exploratory and qualitative approach based on testimonials from mobile users is appropriate to meet with 'the desire for between understandings' (p. 204).

5.2.5.1 Syllabus

Over an eighteen-month period, we carried out eight conversations involving eight informants across two different countries (Aotearoa New Zealand, France). Table 5.1 provides a breakdown of the informants' profiles (byname, status), their organisations (sector, company size), as well as the way the conversation took place (mode). All data have been collected shortly before the Corona (COVID-19) outbreak.

	[INFORMANTS]	[SECTOR]	[COMPANY SIZE]*	[STATUS]	[MODE]
Aotearoa/New Zealand	A	Telecommunication	< 10,000 staff	Manager	Site/Café
	H	Creative writing	SME	Self-employed	Off-site
	M	Hospitality	SME	Manager	Site/Café
	T	Education	< 10,000 staff	Manager	Site
	V	Education	< 10,000 staff	Manager	Site
France	C	Webdesign	SME	Self-employed	Videoconference
	L	Event Management	SME	Self-employed	Off-site
	N	Contemporary Arts	< 10,000 staff	Employee	Site

*A Small and Medium-sized Enterprise (SME) is composed of less than 250 employees (definition of the European Commission).

Table 5.1 Informants and companies details.

Noteworthy, all companies are involved with a substantial amount of creative activities and endeavours (from ideation to implementation), half of the represented companies are SMEs, and all the informants acknowledged dealing with a fair amount of responsibilities, and autonomy in terms of decision-making and creativity. Lastly, even if some companies provide some informants with a smartphone and a tablet, all of them are using their personal device(s) for work purposes either occasionally, or regularly. The first series of conversations happened with four participants (Aotearoa New Zealand, synthesised and titled as 'NZ' in Fig.

5.1), then 6 months later with three more participants (France, summarised as 'FR' in Fig. 5.1). In addition, we organised one more conversation one year later, with one participant (Aotearoa New Zealand) who has good practice across most of the delineated sectors. While collecting the data and in order to strengthen the trustworthiness of the testimonials, we prompted our informants to share detailed examples to illustrate their commentary about the role of mobile technology and its use, especially with the latest contributor who provided more in-depth information in relation to our early findings. Because we started the first set of face-to-face interviews in Aotearoa New Zealand, we opted for the use of a Talanoa method. Talanoa is 'a personal encounter where people story their issues, their realities and aspirations' (Vaioleti, 1999-2003), similarly, Gioia et al (2013) claimed that 'If we had designed our interview protocol around existing theory and terminology, we would have missed a key aspect of their sensemaking by imposing our preordained understandings on their experience' (p. 17). Based on Vaioleti (2006), we also used the three key stages and principles of Talanoa, namely: *Toli*, *Tui*, and *Luva* (Fig. 5.1). As portrayed by Vaioleti, *Toli* 'involves deciding on, selecting the participants' (p. 27) in order to start the collection then the analysis of the data; *Tui* consists of making sense of 'authenticity, relevance and usefulness of the research' which 'dependent on the type and amount of information used, how data are arranged in relation to one another and how they are presented as research' (p. 27); then *Luva* occurs 'when the research is given for the benefit of the community' (p. 27), in our case: sharing back with the participants any results and/or publications.

Overall, Talanoa is analogous to grounded theory, which is often used when investigating new theories instead of methodically continuing existing ones (Fernández et al., 2002), when the research objects are located in the compass of a technical-organisational-sociological-ethnographical enquiry, and in order 'to capture the essence of these sticky inter-relations' (Dougherty, 2017, p. 849). However, Talanoa is built on inclusiveness, participatory (co-creation) and transparent exchanges through the process of empathy, sharing ideas, know-how and experiences. Thanks to Talanoa, we were able to engage in conversations by respectfully and timely sharing knowledge (tacit or explicit) and opinions (belief, propositions or hypotheses). Straightforwardly, Talanoa implies engagement and learnings from both parties - the participant and the researcher.

Therefore, in this research, Talanoa is a more relevant approach to ascertain weak signals and to advance mutual knowledge via exchanged storytelling and cultural respect as it takes the form of a discussion between two experts rather than taking a neutral position for the observer.
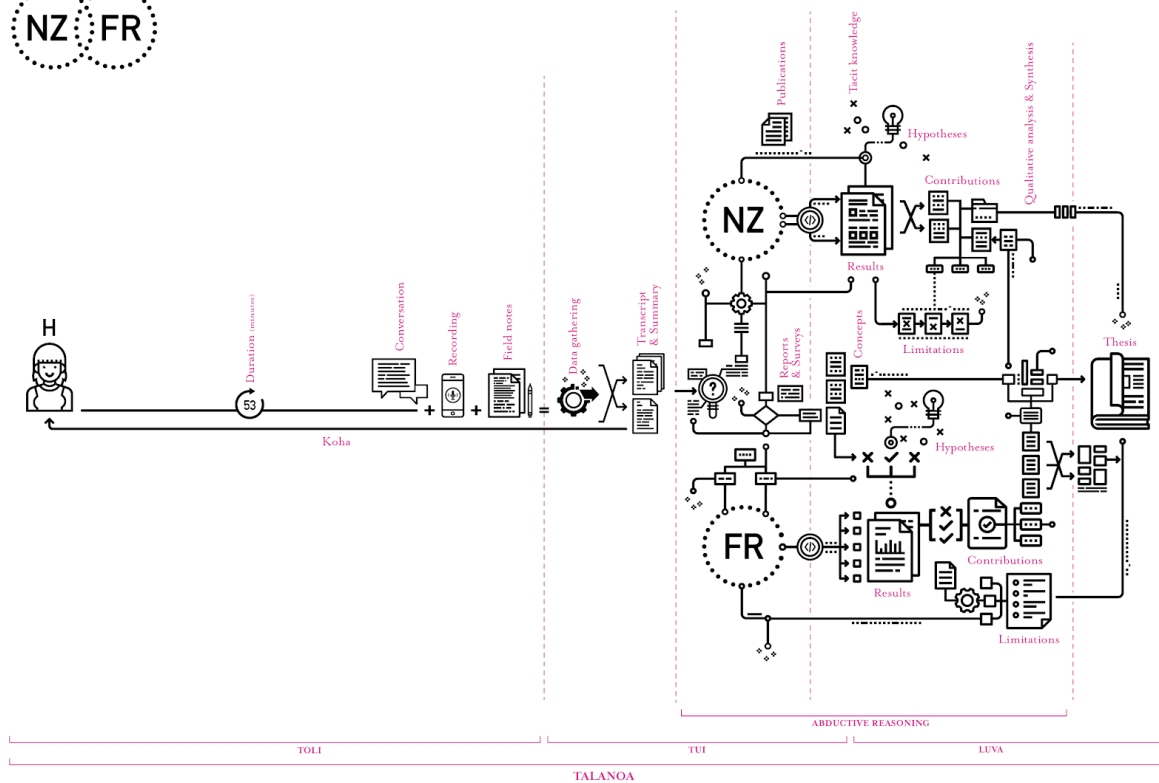
Fig. 5.1 Visualisation of the research design, adapted from Antonczak (2019).

5.2.5.2 Methodological Approaches

During the interviews, we took thorough notes in parallel to the recordings (*Toli* - Fig. 5.1). After each conversation, we synthesised the detailed field notes and quickly shared the audio-recording, its transcript and the synthesis with the informants (*Tui* - Fig. 5.1). By following this rigorous process, we familiarised ourselves with some specific participants' work terminology and *modus operandi*, as well as with their creative mindset/process. Also, the supporting industry-related information originated from a merger of multiple articles, surveys and reports, which were synthesised by professionals and experts (CRÉDOC, Deloitte, McKinsey & Company, and the like), as well as non-profit organisations: World Economic Forum (WEF); National Endowment for Science, Technology and the Arts (NESTA); Research Network on Innovation (RNI) to name a few. Moreover, Figure 5.1 synthesises and visualises the investigation which is based on Bonoma's (1985) five-phase scheme, such as (1) description (*Tui*), (2) classification (*Tui*), (3) measurement/estimation (*Toli*), (4) establishing of association (*Toli*), and (5) determining cause and effect (*Toli*). While unveiling weak signals (Schoemaker & Day, 2009), we also adopted Nag & Gioia's (2012) '"sense-making" (meaning-making) and "sense-giving" (providing meaning for others)' (p. 424) stance. Following the approach of Nag & Gioia (2012), we also 'started discerning linkages among the categories that could lead to the development of second-order themes (theoretically distinctive, researcher-induced concepts, formulated at a more abstract

level, albeit with an attempt to apply informant labels if those labels represented theoretical concepts)' (p. 427). Unitedly, we encountered every recording several times in order to discern resemblances and/or discrepancies among participants. As a result, over time, we ascertained data that were akin, forming some early concept patterns, which we organised into 'first-order categories' (Nag & Gioia, 2012) by keeping the informants' direct words when workable. Figure 5.2 (below) shows the synthesis of the induction of the second-order (themes) and its refinement into an aggregation of attributes, or dimensions as denominated by Nag & Gioia (2012) or Gioia et al. (2013). This meticulous methodological procedure enabled us to reveal some weak signals from the data and to establish more clearly the foundation of the distinctive concepts. We outline that, during the data analytical phase, we also kept peculiar alertness on any possible correlation or interdependence between the emerging concepts, which contributed to consolidating the inductive model accordingly.

Fig. 5.2 From Concepts *to* Attributes*, based on Nag & Gioia's (2012) approach. For readability purposes and due to the word limitation, only up to 5 representative quotes for each first-order category are displayed; please contact the author if you require further examples – Appendix 8.*

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/2S2OSUl]

139

5.2.5.3 Background of the Data and Results

As we revealed some indistinct working features and concealed behaviour, we collated them into concepts (first-order categories), employing language used by the informants whenever possible. Also, by combining the themes (second-order categories) and attributes (aggregation) displayed in Fig. 5.2 (a concise overview of the data collection), and by consolidating the new findings with an additional narrative afterwards (one year later), we verified that the first analysis was consistent with the post hoc assessment and synthesis. To sum up, Table 5.2 visualises the attributes and their direct relation with each testimonial/informant during the first and second stages of the research. The empirical findings detailed in the following narratives provide grounded support for a theoretical framework (*Luva* - Fig. 5.1) that explains how collective knowledge and innovative practices can benefit from mobile technology. Hence, seven core concepts with theoretical significance arose such as *Quick-decision making*, *Easiness*, *Authenticity*, *Glocal Network*, *Collective innovation*, or even *Etiquette* and *Privacy*. Furthermore, supported by a back-and-forth process between the inter-disciplinary literature review and the data analysis, we followed an 'inductive concept development' (Gioia et al., 2013) to unveil four patterned advantages related to collaboration through mobile technology, which we denominated as *m-collaboration* (Table 5.2), namely - *immediacy*, *ubiquity*, *interactivity* and accessibility in information/*contextuality*. We also brought to light three key associated limitations (Table 5.2) - *addiction*, *infobesity* (information obesity) and being connected 24/7/*hyperconnectivity*.

[PARTICIPANTS]

		Aotearoa/New Zealand				France		
		T	V	M	A	L	C	N
[ATTRIBUTES]	IMMEDIACY	+	+	+	+	+	+	+
	UBIQUITY	+	+	+	+	+	+	
	INTERACTIVITY	+	+	+	+	+	+	+
	CONTEXTUALITY	+	+		+	+		±
[LIMITATIONS]	ADDICTION		−			−	−	−
	INFOBESITY	−		−			−	
	HYPERCONNECTIVITY	−	−	−	−	−	−	−

Table 5.2 Synthesis of the empirical findings in conjunction with the Literature Review.

Our data analysis was conducted through an inductive/abductive process (*Tui* & *Luva* - Fig. 5.1), which enabled the generation of emergent theoretical concepts and their correlation. In general, some of the key mobile (smartphones, and associated) benefits defined by Ahonen (2011) arose through the analysis and interpretation of the data. According to Ahonen, there are nine distinctive advantages of mobile and this investigation relates to six of them: mobile is the 'First Personal Mass Media, Always Connected, Always Carried, Available at Creative Impulse, Enables Augmented Reality (in our case: geolocalisation), and Offers Digital Interface'. Indeed, our research, thanks to the new defined patterns, suggests a new perspective on collaborative innovation (Demil & Lecocq, 2012; Suire et al., 2018) and 'collective knowledge' (Levallet & Chan, 2019; Cheng et al., 2019). Some of the attributes such as 'immediacy' relate to participants appreciating the unlimited temporal environment in which they could engage with others (Cochrane & Antonczak, 2013), and exchange knowledge (Suire et al., 2018, p. 72):

> *'I make songs. So in fact, when I go for a walk, or a run in the woods and have some inspirations, I start singing either melodies or lyrics (which I record thanks to my phone) […] otherwise, I forgot when I got home'* (Participant N)

Then 'ubiquity'- mobile devices support contributors' connectivity in spite of the diversity and multeity of their surroundings (Miles et al., 2005; Cochrane, 2010). Also, the vast majority of the participants shared that they have a sense of spatial freedom in relation to their online engagements, or e-social life, thanks to their smartphones which are always in their hands, or in their pockets:

> *'It's the same simple fact that when I'm on the move, on public transport it allows me to continue to monitor my emails and respond to them […] The advantage of receiving a notification of a message for me is to see that your contact is online and to be able to answer him immediately without it being by chance because you opened the application in the evening'* (Participant C)

And 'interactivity'- mobile technology enables direct, or indirect, communication with others for all the participants. Most of the time, the exchange of information happens in a casual and authentic way synchronously (immediacy), asynchronously (ubiquity) and/or even in a 'polysynchronicity' manner (Anders, 2016, p. 257):

> *'And after the other advantage all this is to keep an eye on… on our digital existence… on our work environment, or on our emails, on the moment etc… but always in a consultation way with yeah… with interactions that are fast and light'* (Participant C)

'The conversation is different on mobile, it's more fluid...' (Participant A)

Lastly 'contextuality'- thanks to some of the mobiles devices' features (GPS, accelerometer, for instance), participants can either better record some of their experiences, or 'trigger their memory' (Participant V & A) by using rich-media (video, images and audio, text) and its meta-data associated (Cochrane, 2010; Ahonen, 2011). Yet, a mobile device can provide a better experience in relation to its interface and contextual usage (screen resolution and format, absence of 'third party' such as keyboard and/or mouse, for example):

> *'You're geo-tagging photos, videos, using Twitter on the go, and once again, when you're tweeting getting your location as part of that. So it's a proof that you're actually somewhere that you say you were, doing a meeting, etc [...] so that's the way that I provide a trail of proof of my work activity to my boss because he follows me on Twitter. Because I'm so often in the office'* (Participant T)

> *'Yes, but let's say that on the computer I have the two parts of the body that I need, the eyes and fingers are in the same place... not, finally on a mobile phone. I don't know how to explain it better but in any case, the experience [...] the tactile dimension makes me have one of my senses solicited in addition. Therefore, the experience is more complete (on a mobile)'* (Participant L)

To sum up, this section roughly uncovered four advantages, and three limitations, which explain how mobile technology can contribute to collective and innovative knowledge practices, which we identified as *m-collaboration* (Table 5.2). The next section will further detail these transdisciplinary and exploratory empirical findings.

5.2.6 Discussion/Analysis

Overall, we were able to identify some of the patterns and mechanisms on which some attributes and limitations are established (Table 5.2), and we ascertained unequivocal patterns of variation in how mobile technology can enable organisational work through formal and informal *m-collaboration*. Based on this qualitatively rigorous inductive approach, the following section will address these categories and properties in relation to collaborative and innovative practices in three insights *in minutia*: (1) enabling quick decision-making, (2) connecting with a *glocal* network, and (3) fostering collective innovation.

5.2.6.1 Enabling Quick Decision-Making

Unanimously, participants appreciate the spatiotemporal facility that mobile technology can provide, and the

following is an excerpt of one of the narratives:

'Yeah so I can be in one meeting and quickly respond to another thing and not block the developer'

(Participant A)

Another finding concerns the optimisation of the interviewees' commute, some of which can go beyond the hour. Before they even reach their workplace they can start organising their work priorities, and even answer some emails, or requests. In other words, mobile devices can empower them to 'keep track of people's activity, of what they're doing [...]' because 'it's always on and almost always in my hand' (Participant L) which can be crucial in some business situations such as encapsulated in this extract from another narrative:

'All of those things: time management, organisation, but the biggest thing of all of this... in a time we get bombarded with information in real-time, with multiple devices, it makes it very immediate. So I may know something's going on, somewhere in my day, or when you get this... to come through. So, it makes it immediate. So, I know. And then, I can make a decision when I come out of the meeting either dealing with that, on it's on the back burner for later in the day' (Participant M)

Moreover, all interviewees felt emancipated by mobile devices thanks to the ability to geolocate information, which adds a sense of authenticity (Participants C, L, T & V). In some cases, the bona fide recorded, or shared, information/knowledge associated with metadata such as GPS coordinates can play an important role in making 'strong ties' and supporting cooperative and risk-taking behaviour (Ceceres & Ozman, 2014, p. 164). In other words, mobile devices can improve the efficiency of formal, or informal, cooperative learning experiences (Cochrane & Antonczak, 2015a) and consolidate the trust within collaborative practices (Askay & Spivack, 2010) and 'social process' (Presicce et al., 2020, p. 696), even if it is via establishing a 'swift trust' (Panahi et al., 2012) through genuine and honest, or serendipitous (Makri et al., 2015), interactions.

Beyond some authenticity related to the geolocalisation transpires another enabling factor for making swift managing decisions, or calls for actions, which consists of 'memory triggering'. Indeed, mobile technology can provide valued support by recording an idea, a thought, a conversation, or an interaction within a specific environment and/or time. It is easily ready when users, or collaborators, need it while a laptop has a bigger chance to be either stored safely in a bag, either left on the desk in the office or simply switched off. A conversation with Participant A exemplified this *acumen*:

'The photos are important to me cuz I had to do timesheets, sometimes. I'll actually go to look at my photos, and check what was I was doing to know what was going on and also if I can't if I think back

to when did I do that workshop I can go here and then find all the notes'

In a nutshell, the above outcomes substantiate propositions *P1* & *P2*, and the deduction that mobile technology can improve decision-making via spontaneous and/or immediate ways of recording, sharing and exchanging knowledge across time, space, and surroundings. Some scholars such as Carayannis & Clark (2011) have suggested that 'this technology enables the user to acquire, transfer and diffuse information and knowledge instantly, which creates value-added benefits for executives' (p. 232). This breakthrough enriches that view.

5.2.6.2 Connecting with a Glocal Network

'People I follow in their ideas fuel my head in my ideas, and that's the way I've set up my network. […] I think I have about 600, not a lot… all around the world' (Participant V)

The choice of the environment in relation to a piece of specific knowledge, within a defined period, can be crucial (Nardi, 1999). It can enhance the creation of new businesses/initiatives thanks to new, conscious or serendipitous (Marki et al., 2015), discovered knowledge-based approaches, and new collaboration modes (Ollila & Yström, 2016; Antonczak et al., 2016). This is particularly important at a time of multinational and international development when teams are deployed across the globe according to specific expertise and competencies, as expressed through the following:

'It's cause a lot of the communities I work with are global, and so they can be at any time of the day, because, you know, they're in a different time zone. So, it's where mobile devices are very useful as being able to bridge time zones' (Participant T)

However, unlike Nardi (1999) who emphasised human activities above technology, Evans (2016) declared that 'mobile is an ecosystem, not a screen size' and he defined the new ecosystem as being more pervasive than any traditional one due to the scale of its ubiquitous connectivity and sensors. Thus, relating to Bathelt & Turi (2011), we side with the potentiality of new technologies to change communication patterns and the nature of knowledge generation. For instance, in management research, Edvinsson (2018) questions new operational modes by connecting 'dots in a galaxy of options for value creation' (p. 61), and in learning sciences, Pont (2013) claims that technology is conducive to generating organisational conditions which contribute to improving schools organisations standards (p. 55). Hence, social and human practices are merging to become one, instead of being considered as a 'recursive continuum of mind-body-object practices in specific organisational settings' (Bennis & Biederman, 1997). One clear indication of our findings is that knowledge is

not fixed to a particular site (sector, geographical location, or network) and that mobile devices are fostering the move across various learning practices and actors, which increase the potential for innovative initiatives to emerge and cognitive and social interaction to occur more often (Shapin, 1995; Sawyer, 2008; Hall et al., 2020). Volkoff & Strong (2013) further defined that the 'innovation mechanism starts with a "space of possibilities" that arises from the infrastructure architecture and operations and enables the emergence of ideas for new services' (p. 822).

> *'So, from being open, we changed our lives to being closed inside a space. I think now mobile devices are actually taking us back to the start of... (human evolution) because it allows us to be open again, but also have the affordances of new technology, which our ancestors didn't'* (Participant V)

However, Ceceres & Ozman (2016) identified that, although versatile interactions among collaborators can increase the performance of a network, too many of them can be detrimental. While Carayannis et al. (2013) determined that 'if managed efficiently, these entrepreneurial networks can present unique opportunities for leaders to learn from one another, creating expanded products and services, vision, and the ability to explore' (p. 447). Furthermore, due to our findings with regard to 'hyperconnectivity' and 'infobesity', we propose to slightly adjust our focus on the notion of openness and affordances offered by mobile technology (Makri et al., 2017). As such, transcending networks, communities, geographic boundaries and the myriad of interactions between people contribute to the 'hidden architecture of creativity' (Cohendet & Simon, 2008) by breaking with traditional forms of pedagogical management (Pont, 2013; Cochrane & Antonczak, 2013; Glazewski & Hmelo-Silver, 2019) and innovation management (Ollila & Yström, 2016) that favour forms of organisational continuity, rather than human continuity.

To sum up, mobile technology ubiquitousness can enable new ways of dealing with cognitive and social processes (Sawyer, 2005; Cochrane & Antonczak, 2013; Presicce et al., 2020) with a specific emphasis on human-centred interactions, independently of their physical settings if/when needed; and 'entrepreneurs who leverage mobile technologies tend to increase their chances in the generation of additional resources' (Carayannis et al., 2013, p. 470). This particular discovery corroborates *P2*.

5.2.6.3 Fostering Collective Knowledge and Innovative Practices

Mobile technology can increase the interactions among collaborators, communities or networks by making the sharing of ideas, the recording of quick notes easier despite professional titles, positions or ranks, or being in a

different spatiotemporal environment (Participants L, N, T & V; Cochrane & Antonczak, 2013; Antonczak et al., 2016). Even if mobiles' screens can be a limitation, especially for long documents, for example, it offers another informal space enclosed by a location, a *ba* —a frame 'made up of the borders of space and time' (Nonaka & Konno, 1998). Thus, an idea can then be easily shared concisely, even 'abruptly' (Participant M) in that *ba mobile* (Antonczak, 2019) explained in this narrative excerpt:

> *'When you are on the phone, my responses are abrupt, you know, short, to the point. It says "sent from an iPhone", always at the bottom of the message. So, because quite often, I don't say "dear", I just answer whereas with an email, I will always give salutations, and thank you at the end, or whatever'* (Participant M)

Hereby, it enhances the potential for innovative practices, maintaining collaborative processes (Crosby & Bryson, 2010; Levallet & Chan, 2019) and co-creating solutions (Neghina et al., 2015; Cochrane et al., 2016) by providing an environment without so much distinction about 'social baggage' (Bathelt & Turi, 2011), or by preserving anonymity (Martin-Niemi & Greatbank, 2010) in some cases. This specification echoes the fact that the participants reported that they experienced an increase in reach and access (Antonczak et al., 2016; Cheng et al., 2019). This shift afforded them the opportunity to increase investment activities, innovate, and effectively produce with less effort (Carayannis et al., 2013, p. 470) and 'seizing opportunities' when they come to light (Marki et al., 2017, p. 3). In other respects, mobile technology can serve a very specific community of experts, dispatched across the world, through live or asynchronous interactions and/or notifications which can sometimes help collaborators to stay vigilant about 'vital' pieces of information (Participant M). It facilitates inclusive connections and collective decisions of priorities, time management, and processing of information on the go (Anders, 2016; Levallet & Chan, 2018; Hall et al., 2020) at a swift fingertip within friendly adaptability, modularity and agility coworking (Morel et al., 2018) headspace in spite of potential concerns with regard to 'addiction'. Beyond Levallet & Chan's (2019) definition of the knowledge transfer mechanism, Mercier-Laurent (2011) talks about the 'innovation biosphere' when discussing the attributes of the digital ecosystem dealing with explicit and tacit patterns of knowledge. However, it can generate 'information obesity', or '"hijack" people's minds' (Carayannis & Clark, 2011), which could have some effects on efficiency (Cecere & Ozman, 2018), and contribute to 'knowledge loss' (Levallet & Chan, 2019) or even labour productivity and revenue growth (Aral & Brynjolfsson, 2007) in the case of businesses. The process of curation of information, of new knowledge, could sometimes even become tricky (Participants M & C; Marki et al., 2017; Levallet & Chan, 2019). Nevertheless, mobile technology challenges the routines' performance (Glaser, 2017) by

supporting the logic of innovation, in contrast to the 'organisational status quo or rationalisation' (Alter, 2010, p. 98).

> *'I don't think we share enough, that individuals don't share enough. So, we, as individuals, keep making the same mistake, you probably have made'* (Participant V)

So, self-and others' development, communication, values (Pont, 2013) and productivity across, or not, organisational boundaries can be facilitated via instant messaging or video calls (Bathelt & Turi, 2011), for instance, and less formal cognitive interactions by virtue of mobile technology. Overall, mobile devices are excellent tools for instant communication, for archiving and retrieving interactions or processes, for involving multiple actors across eclectic locations, and, sometimes, various time zones (Cheng et al., 2019), although they require a specific set of skills in terms of spatio-temporal management (Majchrzak et al., 2013), or improvisation (Levallet & Chan, 2019).

To recap, notwithstanding the validation of *P1* & *P2*, this specific argument propounds *P3*: mobile technology can foster a flow of ideas/information/knowledge inner/outer an organisation with a fair sense of collegiality and authenticity (Hall et al., 2020), 'it can support new ways of thinking about learning' (Sawyer, 2005, p. 1) 'ultimately resulting in incremental efficiency gains' (Carayannis et al., 2013, p. 468).

Conclusively, this section determined how mobile technology can enable quick decision-making, facilitate connection with a *glocal* network, and foster collective knowledge and innovative practices. Therefore, it provides a new and preliminary transdisciplinary theoretical ground for collaborative learning and innovative practices in relation to technology.

5.2.7 Conclusion

> *'The farmer cannot make the germ develop and sprout from the seed; he can only supply the nurturing conditions which will permit the seed to develop its own potentialities. So it is with creativity'* (Rogers, 1954, p. 256)

Throughout the inter-disciplinary narrative literature review and the case study presented, our findings suggest that mobile technology can enable collaborative and innovative learning practices by fostering atemporal and dynamic interactions beyond the boundaries of a specific environment. The concept of 'ATAWAD' (Any Time Any Where Any Device) aroused from the narratives, and some of the interviewees particularly appreciated the ability to work in more relevant surroundings to enhance their creativity, such as *cafés* or parks (Cohendet et

147

al., 2018; Morel et al., 2018), which allows them to change their perspective, to get into another headspace, to feel more inspired or relaxed. More specifically, mobile technology enables quick decision-making in spite of users' locations, it enhances creativity by allowing people to work, share, and learn, from any surroundings or settings across eclectic spatiotemporal zones, consequently, it thrives on knowledgeable and contextual collaboration practices. Furthermore, mobile technology 'affords users unlimited access to the Internet' (Carayannis et al., 2013, p. 445), and easily provides users to receive or deliver formal or informal information to others (Levallet & Chan, 2018). As a consequence, over time the nimble information resourcefulness provided by the affordance of mobile technology may induce users' decisiveness, inventiveness, newness, and productiveness (Carayannis et al., 2013), enable serendipitous competency (acquiring skills)(Makri et al., 2019) and solve familiar and unfamiliar problems (Wodtke, 2017) therefore inducing valuable asset for leaders, or companies.

Thus, this transdisciplinary paper makes three contributions to learning sciences, management and organisational research. The first one is about expanding and connecting the literature to, and from, other territories. Supported by a qualitative in-depth analysis of conversations, coupled with content analytical procedures (concepts, themes and attributes), this paper takes a fine-grained approach to mobile technology, and its implication in knowledge creation and management: it can be an efficient tool in a fast and competitive environment, especially for KI organisations, and it can be a pertinent intercessor in terms of inducing a cognitive shift with regard to collaborative and innovative organisational practices. Ergo, this transdisciplinary investigation also aims at consolidating and advancing the vernal field of study of learning sciences (Sommerhoff et al., 2018).

The second one addresses research on collaborative practices by revealing three pertinent characteristics of mobile technology: enabling quick decision-making; connecting with a *glocal* network and fostering collective innovation. Based on the previous results, despite the blurring line between the professional sphere (formal environment) and the personal sphere (informal environment) people like to receive information on the go, stay alert, or be aware, of 'what's going on', without necessarily engaging with anything and being open to serendipitous experiences (Makri et al., 2015).

5.2.7.1 Practical Implications

The practical research highlights many advantages of the mobile device for creative practices and organisational management in a knowledge-intensive environment. Thus, beyond just being a tool, mobile

devices are facilitating collaborative innovation practices by improving management decisions (Carayannis et al., 2013; Makri et al., 2017), enabling new business and operating models (Pont, 2013), developing a flow of ideas inner/outer the organisation, or classroom (Hall et al., 2020), and fostering the ability to make innovation. For example, thanks to mobile technology capability, quick decision-making can enhance managerial improvisation (Levallet & Chan, 2019). If managers could capitalise on this specific aspect, it might also contribute to the reduction of their Information and Communication Technology (ICT) structure and systems.

5.2.7.2 Social Implications

Mobile technology transforms our way to work (knowledge creation and conversion; Levallet & Chan, 2019) and it changes the relations between collaborators in a working environment (beyond physical boundaries). This research sheds light on how a creative and decision-making person can change their work schedule and routines based on the contextuality provided by current mobile devices (Cochrane et al., 2016).

As these benefits have emerged from the analysis of our narratives, they cannot be conclusive. This paper argues that they can still be descriptive and indicative of fundamental principles for creating and understanding the organising of collaborative innovation and how mobile technology can be a key apparatus and interface between people and processes (Morel et al., 2018; Dampérat et al., 2019) in relation to affordances (Volkoff & Strong, 2013; Ahonen, 2011) and innovative practices (Makri et al., 2017) in order to enable real-world learning (Saleh et al., 2019) in formal and informal contexts.

Finally, our research suggests some potential directions for deeper explorations in terms of different target groups, markets, sectors, and geopolitical environments. At this stage, the collected data unravel some weak signals with regard to mobile technology co-creative practices across diverse KI environments. It shall be pertinent to further investigate these findings through a quantitative approach in order to better ascertain path models (Huizingh, 2011) and to strengthen the new results with another qualitative perspective, for example.

One aspect that has not been covered in this research is the impact of governmental policies on digitalisation, the technology sector, technology education, technology investment, and mobile affordances and usage. Also, Aotearoa New Zealand has been identified as being among the top 'World's Stand Out Digital Economies' (The Fletcher School & Mastercard's report, 2017) while France is defined as having a 'high state of digital advancement while exhibiting slowing momentum' which implies that the context of this investigation shall require further international data or sampling. Likewise, this exploratory research would be more complete if

an additional investigation could be made with regard to collective and innovative practices in learning activities and processes in diverse sectors, and cultural environments. For example, it could be part of a larger prospect which could include Agriculture, Energy, Transportation, Finance, Health, and a few more. Yet, it might be interesting to further examine how, in a swift and shifting and borderless digital world, mobile technology can thrive on these cognitive and behavioural interactions with regard to a sustainable environment. Can mobile technology be the proxy of the 'farmer' (Rogers, 1954) of the 21st century?

5.2.8 Acknowledgments

5.3 Synthesis

None of us knows what we all know, together –Euripides

While we previously focussed on the notion of the community of practice or interest, and the implied learning dimension of knowledge creation, it is pertinent to add some precision to the possible challenges to the organisation. Indeed, Wenger et al. (2002) established four key characteristics of the communities of practice that enable them to manage a wide range of knowledge-related concerns:

> • *connect local pockets of expertise and isolated professionals,*
>
> • *diagnose and address recurring business problems whose root causes cross team boundaries*
>
> • *analyze the knowledge-related sources of uneven performance across units performing similar tasks and work to bring everyone up to the highest standard, and*
>
> • *link and coordinate unconnected activities and initiatives addressing a similar knowledge domain.*
>
> (p. 14)

Hence, without being a substitute for the COPs or COIs, we argue that mobile technology can contribute to the enablement of the characteristics by:

> • being constantly carried by the user, and connected to the Internet or telecommunication

network,

- facilitating and constantly recording interactions, and fostering multifunctionality,

- providing meta-data, including GPS coordinates, and providing augmented reality when necessary,

- providing interaction at a fingertip, enabling real-time communication.

Moreover, Slay and Stephens (2013) described co-production as 'a relationship where professionals and citizens share power to plan and deliver support together, recognising that both partners have vital contributions to make in order to improve the quality of life for people and communities' (p.3). Thus, we interpret this definition through two fundamental lenses, previously defined collective practices, and collective intelligence. On that account, Lledo (2021) defined collective intelligence as 'the cognitive capacities that enable a society or a community to adapt to changes in an uncertain world' and added that 'collective intelligence is only fruitful by articulating or coordinating singularities, by facilitating dialogue and listening to others, and not by levelling out differences or, even worse, by gagging dissidents' (Lledo, 2021). While this position partially aligns with Alter (2010) who said that 'to organise means to standardise, plan, schedule, coordinate. To organise is, in short, to reduce uncertainty' (p. 367, translated by the author), Lledo (2021) opposes our perspective on innovation that is supported by Alter (2010) who said that 'to innovate means exactly the opposite' (p. 367, translated by the author). Consequently, we perceive an almost paradoxical conjunction between organising and reducing uncertainty and embracing or stimulating incertitude. Based on our previous findings, we claim that mobile technology offers both, enabling collaborative innovation as an interface between people and systems and fostering innovative practices through the four features described above.

To measure innovation, The Oslo Manual (OECD/Eurostat, 2018) defines four types of innovation, *product*, *process*, *marketing*, and *organisational innovation* (Table 3.2, p.74). In this instance, two types of innovation are related to our results on mobile technology and organisation. First, *Process* innovation, which is defined as 'a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software' (The Oslo Manual, 2018, p. 76), which corroborates the finding that mobile technology can be considered as a 'process innovation' catalyst and is supported by Whyte (2020) who said, 'as an object, the smartphone has substantial organizational force' (p. 430).

Second, *Organisational* innovation refers to a 'new organisational method in business practices, workplace organisation or external relations' (The Oslo Manual, 2018, p. 76), and mobile technology facilitates, accelerates, and hones collaborative practices. Furthermore, Whyte (2020) claims that 'the temporal pace of work changes, with new forms of organizing in the moment rather than pre-planned activity; and new forms of asynchronous as well as synchronous interaction through social media as well as person to person communication' (p. 431). As discussed in *CHAPTER 4,* mobile devices can provide workers with a limitless workplace, spanning the boundaries of a firm, a country, or both.

In summary, in these contexts, the creative genius seems inexhaustible provided it is orchestrated in an adapted organisational context and mobile technology makes it possible to reposition the human in relation to the creative process. Thus, it opens opportunities for the generation of new ideas, modes of organisation, practices and collaborative mindset, strategic discourses, and forms of exchange and relationship (Courpasson et al., 2016). Mobile devices increase the reflective capacity of each person, as well as the potential for interaction between all. Beyond being a simple technical tool, the smartphone ought to be considered as the catalyst for a new way of thinking, working, communicating, and creating.

CHAPTER 6 – A Mobilisation of the Creative Slack and 'Bricolage'

'To improve improvisation is to improve memory, whether it be organizational (Walsh and Ungson 1991), small group (Wegner 1987), or individual (Neisser and Winograd 1988). To improve memory is to gain retrospective access to a greater range of resources' (Weick, 1998, p. 547).

6.1 Preface

Bourgeois III (1981) said that 'slack is the resource that enables an organization both to adjust to gross shifts in the external environment with minimal trauma, and to experiment with new postures in relation to that environment, either through new product introductions or through innovations in management style' (p. 31), and that 'organizational slack […] serves four primary functions: (1) as an inducement for organizational actors to remain within the system, (2) as a resource for conflict resolution, (3) as a buffering mechanism in the workflow process, or (4) as a facilitator of certain types of strategic or creative behavior within the organization' (p. 34). Thus, slack could provide resources for creative practice.

However, Cunha (2005), referring to Baker et al. (2003), presented opposing views on organisational resource management. The first, *Design-Precedes-Execution* (DPE) is driven by the logic of rationality, based on rationality and thinking before acting. The second, *bricolage*, is responsive and seen in how the person will 'react to opportunities with the available resources rather than with the ideal ones' (p. 9). When faced with unpredictable environmental conditions, Cunha said that *bricolage* happens when impromptu actions are necessary. The next paper (Section *6.2*) investigates both aspects of mobile technology as a resource, the slack and *bricolage*, and its affordance. We found that there are similarities between what von Krogh et al. (2000) said, 'knowledge enabling involves a mix of deliberate decisions and going with the flow' (p. 17), and what Weick (1998) found, 'creation and interpretation need not be separated in time, and that sensemaking rather than decision making is embodied in improvisation' (p. 547).

Therefore, with mobile technology (Ahonen, 2011) acting as the key apparatus and interface for collaborative innovation (Demil & Lecocq, 2012; Suire et al., 2018), the following paper (Section *6.2*) argues that mobile devices can be an intercessor between organisational slack (Penrose, 1959) and creative slack (Cohendet & Simon, 2008) through *bricolage* through 'resource invention, requiring a "contingent, inductive and playful" (Kallinikos, 1998, p.179) approach to work' (Cunha, 2005, p. 11). We unpacked terminologies such as *process*,

flow and *stock*, *absorptive capacity*, and *affordance* in a digital environment, and relate the notion of memory with Ferraris' perspective (2014) of ARMI. In contrast, from the perspective of a device that everyone holds in their hand, we re-examine how Weick (1993) construes *bricolage* as 'a process of sensemaking that makes do with whatever materials are at hand' (p.351).

Section *6.2* comprises one publication, that considers the concept association below:

[TECHNOLOGY]   [INTERACTIONS]   [SLACK]

creative economy **>** process **>** flow/stock **>** affordance **>** absorptive capacity **>** creative slack **>** m-Slack

[ROUTINE]   [NETWORK]   [COLLECTIVE INNOVATION]

6.2 *Mobilising* Bricolage *and Creative Slack for Knowledge-Intensive SMEs*

6.2.1 Keywords

6.2.2 Abstract

Within the last decade, more and more scholars focussed on the notion of a hyper-connected world and discussed the impact of the exponential growth of Information and Communications Technology (ICT) in various domains. Essentially, they defined that the world is made of flows, at different scales: flows of wealth and energy, monetary and financial flows, flows of people and goods, the flow of information and knowledge, and flows of exchanges and transactions. Since then, despite some characteristics established by several institutions within the Creative Economy sector or academic works on Creativity, it is difficult to find a single theoretical definition of Managerial management, especially in a relentless context moving towards digital assets and transactions, with regard to value creation and value capturing in digital innovation. In this constantly evolving dynamics of digital data and assets, we claim that Marchlup's question (1979) on the difference between flow and stock is more topical than ever. Consequently, this paper aims at examining digital technologies, in particular, mobile technology in relation to the notion of affordances and absorptive capacity. This paper will also take a new perspective on Cohendet et al.'s concept of creative slack (2010) by examining and highlighting some of the attributes and limitations of mobile technology. It will investigate how mobile devices can thrive in the creative slack for innovative Small- and Medium-sized Enterprises (SMEs). First, the paper presents a theoretical and transdisciplinary framework focussing on notions such as process, flow-stock and slack, absorptive capacity, affordance, and creative slack in a digital environment. It then discusses the hermeneutic methodological approach and its challenges. Finally, it analyses the role of mobile technology in the process of value captation, creation, and protraction to conclude by some theoretical and practical conclusions for managers and organisations interested in international innovative practices.

6.2.3 Introduction

Within the last decade, more and more scholars focussed on the notion of a hyper-connected world and discussed the impact of the exponential growth of Information and Communications Technology (ICT) in various domains. Essentially, they defined that the world is made of flows, at different scales: flows of wealth

and energy, monetary and financial flows, flows of people and goods, the flow of information and knowledge, and flows of exchanges and transactions. And, through the work on creativity (Rogers, 1954; Fleming & Marx, 2006; Caniëls & Rietzschel, 2015) or organisational creativity (Amabile, 1988; Woodman et al., 1993; Slavich & Svejenova, 2016), we have been able to see new perspectives on the notion of what Caves (2000) identified as the Creative Industries (CIs), which are part of a broader field called the Creative Economy (Potts et al., 2008; Fillion, 2011) with its exogenous and endogenous flows. Since then, despite some characteristics established by several institutions (DCMS, 2001; Institut des Deux Rives, 2009; NESTA, 2013; British Council, 2016) or academic works (Cohendet et al., 2010; Ollila & Yström, 2016), it is difficult to find a single theoretical definition on Managerial management, especially in a relentless context moving towards digital assets and transactions, with regard to value creation and value capturing in digital innovation. In this constantly evolving dynamics of digital data and assets, we claim that Marchlup's question (1979) on the difference between flow and stock is more topical than ever. Notably, we argue that the debate between the ephemeral and the trace is more and more pertinent, especially with regards to a coalescence within 'Knowledge Economy' and 'Network Economy', blending a tacit intellectual capital with an explicit and transactional one thanks to digital means. Consequently, this paper aims at examining digital technologies, in particular, mobile technology in relation to the notion of affordances and absorptive capacity (Cohen & Levinthal, 1990). Hereinafter, one decade later with regards to a new digital paradigm, we will take a new perspective on Cohendet et al.'s concept of creative slack (2010) by examining and highlighting some of the attributes and limitations of mobile technology. We will investigate how mobile devices can thrive in the creative slack for innovative Small- and Medium-sized Enterprises (SMEs). First, the paper presents a theoretical and transdisciplinary framework focussing on notions such as process, flow-stock and slack, absorptive capacity, affordance, and creative slack in a digital environment. It then discusses the hermeneutic methodological approach and its challenges. Finally, it analyses the role of mobile technology in the process of value captation, creation, and protraction to conclude by some theoretical and practical conclusions for managers and organisations interested in international innovative practices.

6.2.4 Literature Review

To start, we will highlight some of the key findings of Cohendet et al (2010), and then we will concentrate on specific definitions of a few relevant concepts in relation to technology, notably mobile technology, through references in the broader literature in order to build a common grammar. Within the interdisciplinary literature review, we also consider the nature of the environment for knowledge enactment and performance

based on the work of Cohendet et al. (2010) and we will investigate how mobile devices can thrive in the 'creative slack', thus how mobile technology can endow absorptive capacity (Cohen & Levinthal, 1990) for innovative SMEs.

In a nutshell, Cohendet et al. (2010) defined that innovative organisations can cultivate and flourish projects founded on their enterprising creative slack while using some of the 'locuses of creativity' (p. 143) which are improving and developing their absorptive capabilities (p. 166) through their nexus of communities (p. 167). In other words, they explained that knowledge creation for creative firms relies on the interactions between people, some knowledge transfer, and the enactment of knowledge (p. 166). During their demonstration, they use a few examples of organisations without much details about their size and state of market's maturity, however, Grandinetti (2016) acknowledged that 'it is fundamentally important for SMEs to be able to exploit sources of knowledge outside the firm by means of external relationships' (p. 159). Furthermore, Grandinetti (2016) stressed that the key factor difference between SMEs and large enterprises resides in their ability to take advantage of their external network (p. 159), their 'social capital' that has an 'impact on knowledge acquisition' (p. 160). These findings correlate Cohen & Levinthal's observations (1990) about external knowledge, 'outside-in', acquisition and internal knowledge dissemination, 'inside-in', as being the two fundamental factors with regards to absorptive capacity. Before going into too much detail about 'absorptive capacity' and creative slack, we need to be more specific about some of the terms used by Cohendet et al. (2010), starting with the realm in which they are situated.

6.2.4.1 Creative Economy

In order to examine the impact of mobile technology on organisational, innovative, and financial performance in Knowledge-Intensive (KI) SMEs, we first need to define our sector of focus: the Creative Industries (CIs). While Cohendet et al. (2010) used sometimes the term 'techno-creative industries' (p. 159, p. 162), we would like to take one step back and revisit the notion of what Caves (2000) defined as the creative industries, which included book publishing, cinema, music, theatre, visual arts and, in a later edition (2003) architecture, advertising, design, and fashion. Caves highlighted a certain 'logic of economic organisation' (2000, p. vii) based on a key factor named 'nobody knows' (2000, p. 39) which implies that demand is variable, random and challenges the notion of sunk costs due to the lack of possibility of salvation or recycling (2003, p. 74) and a certain degree of 'symmetrical ignorance' (2003, p. 75). In 2008, Potts et al. introduced a new perspective based on 'an evolutionary model of the creative industries (CI)' (p. 171): they are characterised by the ability to

produce or consume content or information 'predominantly shaped by generic and operational feedback from social networks' (p. 172). This 'prosumer' model and capability is aligned with what Jenkins et al. (2013) portrayed as the 'spreadable media' which consists of embracing the logic of participatory culture through co-creating and sharing media content or information, which further resonates with what Latour (2005) formerly ascertained as the *Actor-Network-Theory* (ANT), inducing the notion of action forward, and of interaction among actants (human and machine). Coming back to Potts et al. (2008): 'the CIs are ostensibly characterized by the dominance of both social production and consumption through the flow of novel rules (as technologies)'(p. 173). This latter point corroborates Cohendet et al.'s (2010) views, who demonstrated that thanks to regular interactions amongst members of various communities, a 'network of cognitive links' (p. 166) is established and, after a while, contributes to a considerable amount of transient knowledge. Thus, according to Potts et al. (2008), CIs' main proposition value lies in what they offer in terms of the 'process of change' (p. 171) through the organisation and management of new ideas, new services and technologies. Besides, we concur with Cohendet et al. (2010) who featured that one of the key elements of CIs is established on the notion of a 'project based firm' (p. 150), therefore it implies a specific process.

6.2.4.2 Process

Cohendet et al. (2010) also defined that, based on a transactional theory, an organisation is only a 'processor of information' (p. 141), whereas, based on an evolutionary theory (knowledge-based) approach (p. 139), a firm is a 'processor of knowledge' (p. 142). Thus, the coordination of the scattered units of knowledge added to the appropriated learning processes are defining the organisation (p. 142). Additionally, Cohendet et al. (2010) also observed that, in general, the CIs are composed of two coexisting systems such as 'knowledge processing' (p. 139), also defined as the 'exploration' (March, 1991), and 'information processing' (p. 139), which consists of interaction between agents or communities, or 'organizational learning' (March, 1991). So, this structuration represents the creative process of the firm in CIs. However, Georgescu-Roegen (1984) defined 'process' as the 'abused term in science' (p. 23) which involves a cost and a constant change, a flux of complexity. He further clearly explained that, prior to naming a process, 'we must first of all determine its boundary with respect to both time and entities of all kinds' (p. 23). Wit, processes involve a cost, 'which raises the issue of the idleness of capital' (p. 25) in relation to a constant flow, 'an evolutionary process' such as depicted originally by Schumpeter (1934). Abiding, Rosenberg (1982) determined that some rapid advancements are the consequences of a 'capitalist growth process' (pp. 5-6) and the agent of an 'extremely disorderly process' (2000,

p. 78), as well as the catalyst for unpredictable 'stock of technological knowledge' (1982, pp. 123-124). On that account, Georgescu-Roegen (1986) previously defined that technology is rapidly obsolete and questionably 'viable' (p. 15), ergo we need to focus on its role in general rather than on a particular technical attribute. This approach echoes Rogers' seminal 'Theories of diffusion' (1983) where innovation exposition and adoption are manifested in 'processes by which participants create and share information with one another in order to reach mutual understanding' (p. 17). Hence, 'the essence of the diffusion process is the information exchange through which an individual communicates a new idea to one or several others' (pp. 17-18). Therefore, the process of creation of resources for SMEs dwells in the 'outside-in' determinant, instead of the 'inside-out' as suggested by Cohendet et al. (2010, p. 142). Whereafter, Grandinetti (2016) explained that an 'interaction-driven process' can have a decisive capacity 'in absorbing knowledge from outside and developing capabilities inside the company, and thereby improving the company's chances of survival' (p. 165) to boot.

6.2.4.3 Flow, Stock and Slack

Although Cohendet et al. (2010) ascertained that *Routine* is pivotal in knowledge creation, we suggest looking at this notion under another theoretical lens. Indeed, due to the nature of SMEs, routines might be better viewed as flow and stock. Therefore, another approach for KI SMEs is the classification of three types of the knowledge process, such as 'transmissions from persons to records, from records to persons, and from person to person without record' (Machlup, 1979, p. 400), and of the knowledge itself into two key categories: 'knowledge on record' along with 'knowledge in the mind' (Machlup, 1979, p. 400). Consequently, Machlup (1979) started to query about the misused and unused knowledge consumption (stock) and production (flow), which led Dierickx & Cool (1989) to illustrate this interrogation by the 'bathtub metaphor': 'while flows can be adjusted instantaneously, stocks cannot. It takes a consistent pattern of resource flows to accumulate a desired change in strategic asset stocks' (p. 1506). Their argument focuses on the strategic adjustment of flows and stocks to form distinctive competencies for the organisation. In parallel, Bourgeois (1981) investigated the necessity to take into account 'a cushion of excess resources available in an organization' (p. 29): the slack. Videlicet, Bourgeois ascertained that 'slack can provide resources for creative behavior' (p. 34), although, referring to Carter (1971, p. 413), he clearly stated that slack cannot be programmed or engineered in advance. Furthermore, organisational slack can act either 'as a buffering mechanism in the workflow process' or 'as a facilitator of certain types of strategic or creative behavior within the organization' (Bourgeois, 1981, p. 31). This approach is somehow in line with the definition of 'innovation' in the Oslo Manual (OECD/Eurostat, 2018,

p. 54): 'Innovation activities can produce knowledge-based assets. The SNA (Author's note: System of National Accounts) defines an asset as a store of value that represents a benefit or series of benefits accruing to the economic owner by holding or using the asset over a period of time'. Moreover, the Oslo Manual defines some innovations as 'an interactive process involving open innovation or user-producer interactions' (p. 55), it also recognised that it can 'emerge through linkages between actors within or across different sectors' (p. 55). Consequently, we believe that our approach to flow and stock fits with what Cohendet et al. (2010) proposed: 'the creative potential of the firm rests on the optimal balance and continuous interaction between formal and informal structures developed within' (p. 140). It also fits with Roberts et al.'s (2012) perspective on technology which can facilitate 'knowledge flows' and 'processes' as well as constitute an effective system 'for applying the knowledge to useful purposes' (p. 626).

6.2.4.4 Absorptive Capacity

Similarly to Cohen & Levinthal (1990) who revealed that 'creative capacity' and 'absorptive capacity' are very much alike (p. 130), we exposed that dynamics between flow and stock can be a source of creative capability for SMEs, from an 'outside-in' perspective. Although Cohen & Levinthal (1990) defined that an organisation's absorptive capacity is built upon 'the absorptive capacities of its individual members' (p. 130), we concur with Cohendet et al. (2010) views about the fact that 'knowing communities' (multiple individuals) have a stronger potential to enhance innovation (p. 148). Complementary, Roberts et al. (2012) claimed that absorptive capacity can be considered from two common contexts: 'as a "stock" of prior related knowledge and as an "ability" to absorb knowledge' (p. 627). This perspective implies the management of the flow and the stock of knowledge and information inside and/or outside of the organisation itself, with specific attention on 'outside-in' for SMEs. In line with the views of Cohendet et al. (2010), we propose to consider the firm capability to learn in relation to the 'unexploited or underexploited productive resources' (Cohendet et al., 2010, 153). By the way, Woodman et al. (1993), demonstrated that 'a reasonable conjecture within the context of this model is that slack resources also will enhance creative outcomes for the organization' (p. 313). They also suggested that it is difficult to precisely define the creative process within organisations and their complex collective structure. Besides, Hérault et al. (2019) explained complexity through the lens of globalisation and they highlighted that the world is getting more and more intertwined which brings more and more unpredictability in spite of technological and economical advancements. Hence, we could query if organisational creative preference could be enhanced by the capability of slack resources thanks to technology.

However, while referring to March, Burger-Helmchen et al. (2016) grounded that the slack provides workers or communities with a buffer of freedom, or creative latitude, beyond the expectations and constraints of the organisation system and structure. Roberts et al. (2012) foresee this point differently by precising that 'modern information technologies perform a critical role in the development and maintenance of a firm's absorptive capacity' (p. 625). To a certain extent, the role of technology in fostering absorptive capacity has been also acknowledged by Cohendet et al. (2010) who stated that 'a virtual exchange of knowledge further enables these members to maintain an intense connection to the global world' (p. 165).

6.2.4.5 Affordances

In our theoretical investigation, we found that Cohen & Levinthal (1990) suggest that, in order to strengthen 'assimilative powers', an organisation should enable 'the individual to make novel associations and linkages' (p. 130). Supplementary, Cohendet et al. (2010) defined 'communities' as primarily composed of 'young professionals' (p. 150), who are 'connected to their community on a daily basis' (p. 151). And, recently, Antonczak (2019) demonstrated that mobile technology can be a key apparatus for collaboration beyond borders and time thanks to its affordance (ease to use, fit in hands, always connected). Then, we come together with Swanson (2019) who, referring to Gibson (1986) and Norman (1990), portrayed technology-enabled functionalities under the name of affordances (p. 1009). In different circumstances, Leonardi (2014) related affordance as the interaction that exists 'between people and an artifact's materiality' (p. 153). Moreover, Roberts et al. (2012) demonstrated that technology can play a crucial role in fostering individuals to share and exchange amongst themselves, or beyond their community, via 'computational and communication abilities' and, as a consequence, broadening the potential for absorptive capacity (p. 640), especially thanks to mobile technology affordance. However, Dégot et al. (1982) highlighted three important issues in relation to affordance and technology: the first one is about the 'use of increasingly sophisticated equipment introduces new dependencies on social activity', secondly the 'dependencies on technology itself, making problems of equipment reliability crucial', and lastly 'dependence on certain social actors located at key positions in the technological system, who thus hold considerable power' (p. 166). Besides, Lansmann & Klein (2018), pointed out that 'increasing IT use initially yields productivity gains, however, beyond a certain intensity of IT use, gains turn into losses' (p. 3). In spite of the latter challenges, mobile technology enables interactions (Anders, 2014; Antonczak, 2019) and fosters the '"hidden face"' (informal relationships) (Burger-Helmchen et al., 2016, p. 250). Incidentally, Grandinetti (2016) worked out that 'interaction-driven absorption' can create (p. 163)

and belongs to the foundation, 'start-up', phase of any firm (p. 166). Hence, more broadly speaking, it is highly relevant for SMEs. He also identified that the 'interaction-driven absorption' process can generate outstanding outcomes via co-creation (new knowledge 'within' the relationship; Grandinetti 2016, p. 163). Alongside, Roberts et al. (2012) argued that (mobile) technology can provide organisations with efficient capabilities management which nurture in turn 'knowledge exchange across intra- and inter-organizational boundaries' (p. 641). And, recently, Antonczak (2020) unveiled that 'mobile devices' affordances sustain ongoing interactions and exchanges, as well as reshaping new modes of cooperation via a digital and online culture' (p. 29).

6.2.4.6 Creative Slack

For the purposes of our analysis, we need to broaden the evolutionary approach to the theory of the firm formulated by Cohendet et al. (2010, p. 141). Indeed, Cohen & Levinthal (1990) appropriately asked if absorptive capacity should be exclusively generated in-house or could it be possible for an organisation to buy it out (p. 135). Based on Cohendet et al.'s (2010) vision, we advocate that the creative potential of an organisation resides in its capability to enact knowledge amidst its 'formal', 'the hard architecture of knowledge' (p. 147), and informal, 'soft architecture of knowledge' (p. 147), borderless network. However, Grandinetti (2016) is more specific, he claims that a 'C-factor (where 'C' can stand for both 'cluster' and 'community') facilitates a mutual understanding between organizations (firms and institutions) activating and developing relationships, and between individuals working at the same or different organizations' (p. 166). Moreover, Hannola et al. (2018) discovered that technology can empower workers, or collaborators, by sharing 'their contributions openly in a communally updated pool of knowledge' (p. 4735). Therefore, 'mobile learning' can bring a valuable way 'to perform a wider range of tasks and to share more responsibilities', and 'available at the right time in the right place' (p. 4737). Furthermore, knowledge is subject to continuous change, as work practices evolve and requirements change' (p. 4737). Thus, it can make the innovation process relatively insensitive to geographical distances and time differences. Another output of the innovation process was categorised by Penrose (1959) as being either 'unexploited' or 'underexploited' resources but Cohendet et al. (2010) grouped them differently under the 'creative slacks'' (p. 150). Yet, they extended Cyert & March's (1963) seminal definition of the slack which enables individuals, or communities, to reduce conflict, control and injunction with/from hierarchy and administration. They also defined creative slack as a decisive competitive advantage for organisations for a minor monetary worth, and as a sanity buffer between employees and administration (p. 154). Corollary, Hannola et al. (2018) advanced that technology enables 'new work practices

and new organisation of work' (p. 4739). Consequently, referring to the notion of the working environment beyond organisational boundaries to digital spaces enabled by mobile technology (Teece, 2018; Antonczak, 2019), we can conjecture that we are moving from a 'production worker' perspective to a 'creative worker' one, sustained by the notion of creative slack (Cohendet et al., 2010) and 'social complexity' (Faulkner & Runde, 2019), in KI SMEs.

6.2.5 Methodology

Overall, the analytical *armamentarium* (*Appendix 9*) consisted of a series of workshops which implied some interactions with the participants and provided a platform for in-situ human and technology engagement and observations; a survey; a follow-up questionnaire; and some back and forth analysis between the empirical findings and the previous interdisciplinary and theoretical literature review.

The study, consisting of 15 questions (*Appendix 11*), was carried out among 39 participants, nearly 36% of whom were located in Japan and 64% in France. The average age of the participants in the Japanese group was 22 years old compared to 23 years old in the French group. Among the Japanese participants, two-thirds are women, whereas, in France, three-quarters are women. In simple terms, our international study involved young professionals across Western (France) and Eastern (Japan) societies. To wit, the data collection was carried out in three stages: the first stage consisted of creating and facilitating a three-day workshop on mobile technology and creativity; the second stage was in the form of a questionnaire to be filled in by participants during the second or third day of the workshop; and the third stage took place twelve weeks later via a qualitative questionnaire, sent by email to each participant.

6.2.5.1 Methodological Framework

Predominantly, this transdisciplinary research used a hermeneutic approach, which was complemented by abductive reasoning. Figure 6.1 encapsulates the methodological framework. First, interpretative hypotheses were established. Then, thanks to the workshop arrangement, supported by the two other data collection stages, we were able to test our interpretative hypothesis and understand participants' actions within context (Krogerus & Tschäppeler, 2012).

Theory · Concepts · Specification errors · Attributes · Questions · Operationalisation errors · Online questionnaire · Measurement + non response errors · Responses · Processing errors · Data file

mobile friendly

feedback loop

THEORITICAL WORLD · EMPIRICAL WORLD

QUESTION DESIGN (adapted from the Oslo Manual 2018, 187)
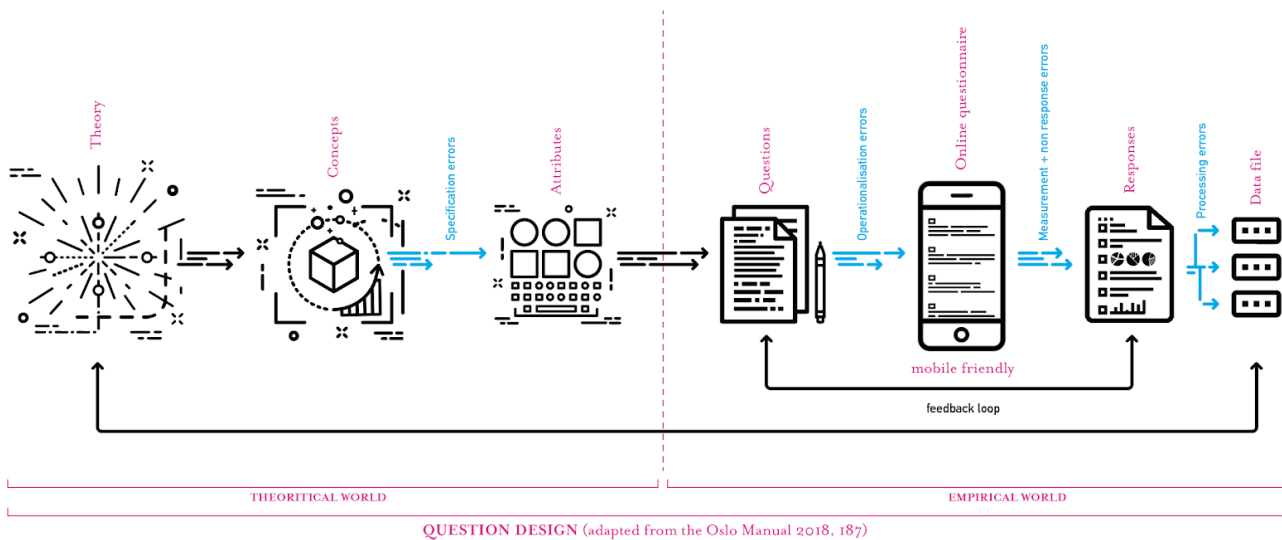
Fig. 6.1 Methodological framework – Appendix 9

During the empirical collection of information, we were also able to decipher the big picture from its parts, which led us to the process of regularly reassessing the pertinence and relevance of the hypothesis. Therefore, the hermeneutic circle was frequently gauged in relation to the human actions and attitudes observed during the workshop (Taylor & Søndergaard, 2017). Furthermore, in order to reconstruct the nexus of meaning, we used an alternating process of thinking between the general theory (*Literature Review*) and the collected data (workshop, survey and questionnaire), as well as some phenomena (observations in-situ) (Peirce, 1903; Carcary, 2010). Complementary, we determined some archetypes as a result of the correlation between tacit knowledge based on the empirical findings, a mobile technology expertise (tacit knowledge), and the "conflicting literature" and "similar literature" (de Weerd-Nederhof, 2001), from industry publications to academic ones.

6.2.5.2 Results and Contextualisation of the Data

The key findings are visualised in Figure 6.2. Approximately 35% of the French participants consider themselves to be "hyper-mobile" compared to only about 15% of the Japanese group in terms of creating and sharing or exchanging and disseminating content. Noteworthy, by content, we encompass data, facts and codified knowledge (explicit). On the other hand, 25% of the Japanese consider themselves to be "mobile-occasional", and the same statistics apply to the French cohort (Fig. 6.2, #3). In keeping with existing

conceptions in the transdisciplinary literature, our data bring to the fore the importance and prevalence of mobile technology in content creation.

CREATIVE WORKERS OUTCOMES
% of respondents (n = 39)
● French   ● Japanese

#07 office hours
60.9 / 86.7
47.8 / 28.6
when necessary

#10 online document sharing
56.5 / 100
91.3 / 85.7
social networks

#03 occasional mobile
26.1 / 36.7
34.8 / 14.3
independent hypermobile

#08 same department only
30.4 / 57.1
47.8 / 7.1
across different industries

#11 good
43.5 / 42.9
13 / 0
perfect

#04 sedentary and nomad
47.8 / 57.1
26.1 / 0
nomad and teleworker

#05#06 home
54.3 / 67.8
50 / 46.4
free access professional areas

#09 emails
95.7 / 100
8.7 / 0
social media

#12 preparation phase
68.2 / 71.4
50 / 64.3
evaluation phase

Fig. 6.2 Summary of the key international findings.

About 50% of both groups consider themselves to be 'sedentary and nomadic' at the same time, and more than half of the participants work mainly from home, alternatively from free professional Internet access at least once a week. Overall, these numbers (Fig. 6.2, #4) present emergent patterns of how practices can expand beyond any physical KI working environment (Fig. 6.2, #5 & #6).

To the question 'When do you work?' (Fig. 6.2, #7), a vast majority responded that they work during standard office hours and beyond, especially in the evenings. On the other hand, twice as many French people answered to work "when necessary" compared to the Japanese. These data, supported by our ground observations and notes, tend to confirm that there is a growing trend towards working on 'project mode' continuance.

To the question 'Who do you work with?' (Fig. 6.2, #8), twice as many Japanese participants compared to the French ones work exclusively with colleagues in the same department. However, almost half of the French participants reported working seven times more with colleagues from different industries than the Japanese. Finally, proportionally, the Japanese group works three times as much alone, or with whomever, as the French group. Our data and analyses suggested a prominent difference in cooperation and collaboration via CoI or CoP, outside the firm, or beyond expertise, between France and Japan.

Despite a slight difference in terms of mobile phone use and calling practices (Fig. 6.2, #9), all participants report very similar uses for their smartphones (emails, shared diary, videoconferencing). It is interesting to note that about 10% of the French participants also indicate 'Social media'. The relational analyses of our data also suggested that mobile technology provides users with affordances in communication and online interactions.

The same is true for distance working tools with a slight difference in terms of social networks and documents shared online; i.e. more use of social networks for the French group, and more documents shared online by the Japanese group (Fig. 6.2, #10). Throughout the in-situ observations, a consistent pattern emerged showing that the participant viewed mobile devices as empowering them in terms of ubiquity, immediacy and interactivity which in turn can enhance KI work processes and collective innovation.

Unanimously, the level of quality of work from the mobile is estimated between 'very good' and 'average', while Japanese people think their work is rather 'rough' or even 'bad', compared to French people who think it is 'excellent' (Fig. 6.2, #11). As a corollary to this observation, we note that these numbers might be the result of cultural differences in self-esteem and personal standards and expectations, and it raises the cultural question of the definition of 'slack'.

Both groups admit to using their mobile phones mainly in the 'Preparation' and 'Incubation' phases of their work (Fig. 6.2, #12). Besides, the rate is low for the 'Production' phase and double for the 'Evaluation' phase. These numbers clearly confirm that mobile technology primarily enables the production of new knowledge, during the 'exploration' phase, and can be relevant for the 'dissemination' phase.

With regard to agility, what matters most for the Japanese group is 'spatial' agility, 'digital' agility and 'relational' agility. As for the French group, the results are mixed with, in general, rates not exceeding one third for 'temporal', 'spatial' and 'relational' agility. It is interesting to note that for the question of independence, there is an inversion of the rates between the Japanese and French groups between, respectively, 'quite important' and 'not at all important'. Finally, the French group associates the answers concerning mobile phone agility with the words 'freedom', 'Internet connection' and 'teamwork', while the Japanese group associates 'independence' with 'autonomy'. In particular, our findings suggest that mobile contextuality is not so important for the respondents.

For the French group, the practice of working on mobile phones is a 'modernity', reflecting a certain 'independence' associated with a notion of 'fun' (playful practice). On the other hand, the Japanese group focuses on the notion of empowerment thanks to digital tools, but with some confusion about the limits between private and professional life. It is also interesting to note that mobiles offer a pair learning opportunity for Japanese and French people. To abridge, our data reiterate that mobile technology enhances various action possibilities (collaboration, sharings and interactivity) in easy and timeless ways beyond culture.

Finally to the question 'What kind of opportunity does the mobile offer at work?' just under half of the participants in the Japanese group think that these are individual qualities. The overall findings depict a consistent characteristic such as personal development via affordances.

6.2.6 Discussion

Until now, we specifically focussed on the role of mobile technology in the creative process with particular attention to the notions of process, affordances and absorptive capacity. Through a transdisciplinary perspective, we also established that mobile technology enables decision-making and fosters a shift from a traditional transactional approach to a contemporary transformational mindset, what Cohendet et al. (2010) defined as the evolutionary approach (p. 141), through participatory approaches, or 'prosumers' (Jenkins et al., 2013). Besides, we highlighted that for most SMEs, the challenge is not about the 'inside-out' transfer of knowledge but the other way around: the 'outside-in' (Cohen & Levinthal, 1990; Grandinetti, 2016). Additionally, Paulin & Suneson (2012) identified that, in some cases, knowledge sharing could be problematic due to flawed interpersonal relations or group/community typical features such as 'team characteristics and

process, diversity, social networks' (p. 85), and further explained that contextual and environmental changes can soar knowledge barriers over time (p. 89). This peculiar aspect is eminently important for small teams, or communities, such as those found in SMEs and their forging network. However, Burkhardt & Lubart (2010) described three (mobile) technology characteristics with regards to bolstering creativity: '(1) to help people develop skills related to creativity or creative thinking; (2) to support people's creative process while engaging in a creative task; and (3) to engage people in new kinds of experiences (Nakakoji, 2005)' (p. 162). Hence, we ascertain that the management of people, organisations and technology are linked, connected, and, perhaps more interesting than the management of technology by itself is the culture of technology. Indeed, Carayannis et al. (2013) proclaimed that 'the cultural mobility evolution (CME) relates to a cultural shift out of necessity for doing business' (p. 468) because it impacts all the components of an organisation, especially SMEs, from relational processes to organisational creativity, 'whereby creative acts take place in and at the intersection of communities, platforms, and networks' (Slavich & Svejenova, 2016, p. 246). Referring back to Amabile (1996) who identified that teams should be autonomous and composed of individuals with different perspectives, and profiles and be free of action, we assert that mobile technology can enable creativity and foster the 'hidden architecture of creativity' (Cohendet et al., 2010, p. 165).

6.2.6.1 Thriving the Creative Slack

Cohendet et al. (2010) brought to light that being connected with numerous communities enhances 'boundary spanning, knowledge broking and knowledge sharing' (p. 159) which is beneficial to creative outputs. Taking a congruent but distinct view, Antonczak (2020) identified that mobile technology fosters the concept of 'ATAWAD' (Any Time Any Where Any Device) and some of his findings showed that some workers particularly appreciated the ability to work in more relevant surroundings to enhance their creativity, such as *cafés* or parks (Cohendet et al., 2018; Morel et al., 2018), which allows them to change their perspective, to get into another headspace, to feel more inspired or relaxed. Taskin & Dietrich (2020) illustrated this viewpoint by citing Aubert (2018) as such: 'the office never leaves the individual' (p. 27). Some participants even argued that mobile technology can allow a good transition between places and inspiration, between formal and informal learning environments, and informal being more authentic. Conjointly, mobile technology can support different cognitive dynamics. Therefore, mobile technology thanks to its affordance, its multiple functionalities and its capability to record and recall any interactions or transactions (Serres, 2012; Ferraris, 2016) enhances a 'nimble approach' (Antonczak, 2019, p. 29) in collaborative practices. It can augment multitasking or

multi-functioning, and immediacy, it can facilitate complex interactions as well as stimulate network creation (Bathelt & Turi, 2011, p. 525) also. Thus, mobile technology can foster what Aral et al. (2007) defined as such: 'information workers who receive a greater volume of novel information or who receive it sooner complete projects faster and generate significantly more revenue for the firm' (p. 22). To go one step further in terms of (co)creation, in response to Penrose (1959)[1], Cohendet & Simon (2008, pp. 7-9) proposed the notion of creative slack which is 'shaped by the culture of the firm and is essentially understandable through the jargon of the organisation'. Furthermore, in order to keep the creative slack economical, they determined crucial conditions, one of them being the autonomy of communities of practices by maintaining the production and conservation of any relevant knowledge. Consequently, it seems reasonable to assume that mobile technology can bring a new dimension to the creative slack, as defined aforementioned, by 'augmenting' the possibilities of documenting, transferring/exchanging or sharing, and archiving/retrieving some *ad-hoc*, spontaneous or impromptu moments, ideas, thoughts, feelings, hunches and, foremost, by shifting its geo-localisation beyond the organisation itself, within the *ba mobile* (Antonczak, 2019), a phygital (amidst physical and digital) shared space. Although there are some nuances between information and engagement, mobile technology strongly nurtures collaborative nomadism (Duperrin, 2016) in real-time. The attributes and advantages of mobile devices increase the probability of creative and efficient outcomes, whereas social interactions (Bathelt & Turi, 2011, p. 525), and faster and authentic communication exchanges (Bartolacci et al., 2016) through 'social technology' (Drucker, 1994, p. 19). As a consequence, mobile technology could provide collaborators with more inducement and by the same token, for SMEs, alleviate the sunk cost which could generate a powerful competitive advantage for firms (Bourgeois, 1981). In line with Cohendet et al.'s (2010) demonstration about the competitive advantage of the creative slack resulting from a constant interaction between working groups and 'knowing communities' (p. 140), we infer that mobile technology foster the creative slack by facilitating the circulation of 'micro-creative' ideas that have 'emerged during a project' and which appear 'to be relevant' (p. 153). Aside, Carayannis & Clark (2011) found that '"smartphones" can incur opportunity costs in terms of the effectiveness and efficiency of conducting business by causing distraction and disruption of the otherwise regular and natural flows of daily business and personal lives' (p. 202) and returning to the research question and our findings, we advance that mobile technology can thrive the creative slack for innovative SMEs in accessibility to information, knowledge and contextuality, wherefore it can strengthen the growth of absorptive capability and organisational slack yonder regulatory and governing performances. To sum up, based on the *ba mobile* (Antonczak, 2020) –a shared digital environment–, we infer that the transient character of mobile technology and its attribute can thrive the creative slack, and we propose to name this new finding the 'm-slack'

(mobile creative slack). Based on Cohen & Levinthal (1990), Roberts et al. (2012) and Grandinetti (2016), Figure 6.3 represents a freshened understanding of the absorptive capacity and slack in relation to mobile technology (IT capabilities) and KI SMEs.
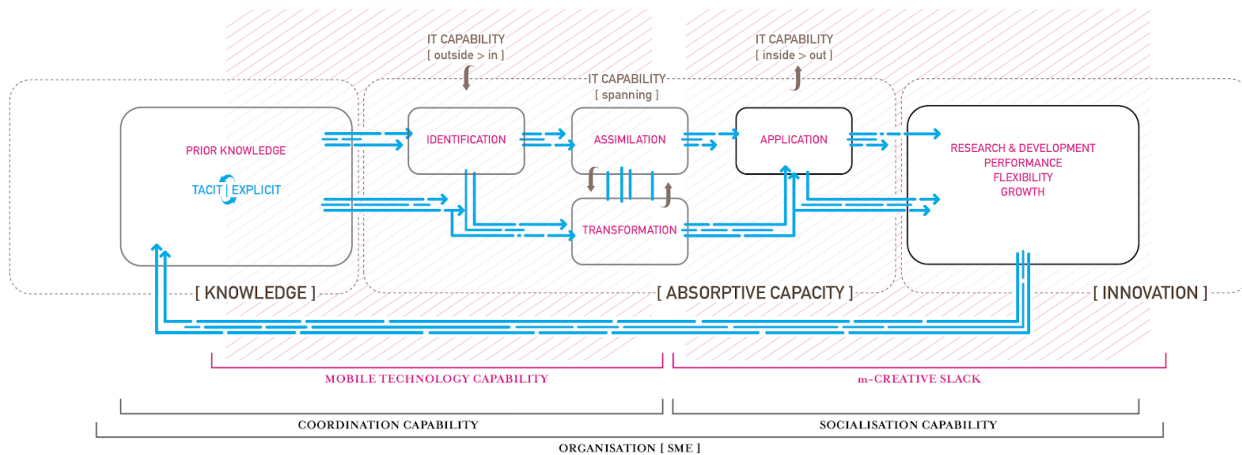
Fig. 6.3 Mobile Technology capability & m-slack. The flow of knowledge is represented in blue, and the discontinuity of the arrows visualises what Levallet & Chan (2019) named 'knowledge retention' and 'knowledge loss'. It also features 'technology opportunity' and absorptive capability' (Cohen & Levinthal, 1990, p. 140) for KI SMEs (Grandinetti, 2016, p. 162) in relation to 'IT capabilities' (Roberts et al., 2012, p. 641), consequently, it envisions the creative slack (Cohendet et al., 2010) with regard to mobile technology – Appendix 12.

 [Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/3418U7k]

In other words, the *m-slack* is a result of new ways of cooperation, collaboration and co-creation thanks to mobile technology which enables more fluidity in exchanges (memorisation and interaction), and flexibility to 'enact' knowledge beyond the organisation's borders. Hence, the *m-slack*, by responsively influencing processes rather than just controlling them, can foster productivity for SMEs.

6.2.6.2 Mobilising *bricolage*

As implied by the discussion above, 'most of the learning activity results from a learning by doing process', which instigates the creation of a 'common cognitive framework' (Cohendet et al., 2010, p. 145). Then, consistent with the work of Weick (1993-2003) and Cunha (2005), we introduce a supplementary approach to the creative slack in relation to mobile technology: *bricolage* [2]. More precisely, based on Weick (1993), Cunha (2005) reiterate that organisations often rely on *bricolage* with regard to what Cohendet et al. (2010) indirectly denominated as 'knowledge in a not-so-organized fashion' (p. 155), 'the interplay' (p. 157), or to what

is nowadays labelled under buzzwords such as 'agility', 'flexibility' or 'efficiency'. Noteworthy, while Lévi-Strauss (1962) outlined that 'the "bricoleur" may not ever complete his purpose but he always puts something of himself into it' (p. 21), Weick (1993) defined *bricolage* as being 'a process of sensemaking' (p. 351), and Cunha (2005) appended this approach of 'impromptu action' by introducing the 'unplanned environmental' (p. 11) dimension in organisations. Cunha also highlighted that 'minimal structures create a space for exploring novel uses of materials' (p. 19) compared to larger and vested organisations which 'invite their employees to follow established procedures and to use resources in predetermined ways' (p. 19). This concept resonates with most of SMEs' *modus operandi* and, to a certain extent, it fits Leonardi & Barley's (2008) stance in ways that 'the practice and organization of crashworthiness work was tied to the technologies' materiality and the nature of affordances that the materiality provided' (p. 165). Hence, since 'people are not very good at forecasting', then 'bricolage may be necessary' (Cunha, 2005, p. 20) and mobile technology can facilitate the apprehension and comprehension of 'affordances as action potential' (Swanson, 2019, p. 1013). Thus, this specific take on sociomateriality, its enactment of collective capability through normalisation enabling limitless *collages* (Orlikowski, 2002) in relation to the 'digital society' (Cecez-Kecmanovic et al., 2014, p. 809), is not without reminding De Certeau's (1990) analysis of tactics in everyday life, and the practice of economic misappropriation (p. 47) through organisational *bricoleurs*. Another important aspect of *bricolage* in relation to technology and organisational management was established by Duymedjian & Rüling (2010) who characterised 'the bricoleur's stock as being closed at the point when bricolage occurs, the act itself relies upon a high degree of openness of mind, in particular towards new uses and views about the bricoleur's resources' (p. 143). Hence, *bricolage* entails a constant flow of information and actions with regard to the 'ongoing practice of diversion and permutation of elements' (p. 135) enabled by mobile technology, which affords users permanent connectivity through the Internet and pervasive sharings (Carayannis et al., 2013; Antonczak, 2020). Moreover, Carayannis et al. (2013) also stressed that mobile technology is a key element to increase competitiveness and considerable benefits by enabling 'knowledge acquisition and social networking connectivity' (p. 448) through 'interactions and connections between various participants within their respective network system' (p. 450). As a result, based on Cohendet et al. (2010) who highlighted the distinction between '"knowledge-how" (knowing how to do things for yourself)' and '"knowledge that" (knowing how to get things done for you)' (p. 148), we deduce *bricolage* as being a key factor to foster the *m-slack*, defined previously. Moreover, as Brown & Duguid's (1991) analysis suggested organisational learning and communities of knowing venture on 'improvisational sparks' (p. 54) to produce innovative practices or outputs. However, while Cohendet et al. (2014) understood 'constant friction', and 'abrasion' within 'formal

and informal structures' as routines interactions (p. 140), we take a different approach by interpreting this relentless and dynamic flux of actions and organisations as being the essence of the newly defined *bricolage* combined with mobile potentials. Indeed mobile technology 'memory function makes possible both: the collection and recording, and the consultation and regaining of ideas, impressions, thoughts, facts, feelings, to name a few, afterwards' (Bathelt & Turi, 2011, p. 525). Hence, our intention is not to adjudicate among different perspectives on 'routines' and/or 'dynamic capabilities' (Cohendet et al., 2010, p. 145) notwithstanding we wish to challenge their pertinence for KI SMEs, which often lean on improvisation and sensemaking while dealing with uncertainty and ambiguity (OECD/Eurostat, 2018) compared to larger enterprises (Grandinetti, 2016). In other words, 'other serendipitous opportunities may also take place by the user accessing content for an unspecified purpose, which can lead them to something unexpected' (Carayannis et al., 2013, p. 455) which means that mobile technology affordances can enhance a 'techno-bricolage' mindset which in turn will feed the *m-slack*; and vice-versa the *m-slack* can support SMEs knowledge workers and community members 'to provide for one another social "affordances" (Cook and Brown 1999) that scaffold knowledge creation in practice' (Brown & Duguid, 2001, p. 203).

6.2.7 Conclusion

To conclude, we located the research in the realm of Creative Economy with a particular focus on KI SMEs and, stimulated by transdisciplinary means, we investigated Cohendet et al.'s concept of creative slack (2010) in relation to mobile technology by investigating some core notions being 'process', 'flow and stock', 'slack', 'absorptive capacity', 'affordances', 'creative slack'. Through a hermeneutic methodological approach, we analysed the role of mobile technology in the process of value captation, creation, and protraction with regard to innovative practices. We aimed at rejuvenating theory along the lines suggested in Cohendet et al. (2010), especially taking into account a *bricolage* perspective rather than 'routines' in a creative environment. Hence, we also raised awareness of mobile technology as a catalyst for knowledge and value creation, an intercessor for creative slack growth and resourcefulness. In short, this research broadened and deepened what Carayannis et al. (2013) summarised as 'Entrepreneurs who leverage mobile technologies tend to increase their chances in the generation of additional resources' (p. 470). Although our empirical examination is preliminary, our consideration of absorptive capacity and creative slack in relation to mobile technology contributes to a new *acumen* on nexus and flux in KI SMEs. Based on a different methodological approach, further work might consolidate some of our findings while refining a comprehensive framework. We also suggest more closely examining the relationship between collaboration and training in SMEs.

6.2.7.1 Contribution to Scholarship

This paper endeavours to hone the corpus on mobile technology in relation to organisational and knowledge management with respect to CIs, and KI SMEs. It also provides new insights into international and innovative teamwork thanks to digital means. By the same token, it brings particular attention to mobile technology as being an intercessor between 'organisational slack' (Penrose, 1959) and 'creative slack' (Cohendet & Simon, 2008) over and above organisational frontiers. It also extends the definition of creative response which 'can always be understood ex-post; but it can practically never be understood ex-ante' (Schumpeter, 1947, p. 150) in relation to technology. Finally, we propose a freshened understanding of mobile technology capability and its fastening with the creative slack (Fig. 6.1).

6.2.7.2 Contribution to Practice and Management

Another contribution is about providing KI SMEs with insights to support them to thrive in their organisational/creative slack as well as to foster their digital culture by highlighting a potential paradigm shift in people's behaviour and thinking due to the digital advent. Hence, improving the learning and quality/pertinence of outcomes for their respective creative teams and communities thanks to mobile 'enabling technology' (Teece, 2018). Also, mobile technology, if leveraged effectively, can enhance collaborative teamwork by making 'informational and social resources more accessible and transparent' (Cross et al., 2016); it could support a kind of open organisational architecture: the fluidity of exchanges, flexibility to act. These findings should be of economical and structural interest to both SME practitioners and policymakers. Although indirectly mentioned, SME managers should further consider mobile technology as a catalyst for creativity and collective engagement (Slavich & Svejenova, 2016) ergo productivity (Aral et al., 2007; Teece, 2018).

Finally, this research has some useful implications for practising managers by determining some guides in relation to *Business Model Innovation* and some directions for enhancing Entrepreneurship via Digital Communications and Technological Innovation.

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NOTES

[1] Penrose (1959) defined organisational slack as being the result of a company or association's accumulation of some kind of stock of inexorable residual, or stock-still during the various phases of creating any product or service.

6.3 Synthesis

As discussed in Section *4.3.1*, in spite of cultural differences and expanding digital culture worldwide, the organisational *entrepreneur* generates new practices by utilising the 'cracks in the surveillance of the proprietary powers... creating surprises in those cracks' (de Certeau, 1984; Hjorth, 2005, p. 391). In contrast, Throsby (2001) defined cultural value as 'a set of attitudes, beliefs, mores, customs, values, and practices which are common to or shared by any group', and more narrowly as 'certain activities... and the products... which have to do with the intellectual, moral and artistic aspects of human life' (p. 4). Thus, our argument about mobile technology being an enabler for collaborative and added value exchanges is relevant. The challenge manifests in two areas, interactions and timing. First, Deloitte (2017) in *Tech Trends 2017*'s *Report* 'The Kinetic Enterprise', found that an important asset in the 'dormant information from the company unstructured data (email, photos or videos)' aligns with our hypothesis concerning the *m-slack* (m-Creative Slack) and the benefits attributed to exponential technologies. The report also highlights the profitableness of technologies, including mobile technology, assisting the progress of 'more natural interaction with the user', and in 'relations with customers or partners or modes of collaboration between employees'. Likewise, Edvinsson (2018) identified interaction value, described as 'the most important and fundamental unit of measurement of doing business digitally' (citing Anne McCrossan of Visceral Business, p. 59). We claim that *m-slack* fosters interaction value, and can inflate or widen the creative slack.

Second, Chris Moyer (2016) affirms that key characteristics of mobile technology enable 'better decision-making on the go', with 'the true value of mobile [...] improving the accuracy and speed of business processes'.

Thus, mobile devices provide users with a compelling tool to grow innovative practices in an exponentially expanding digital world (WEF, 2016). This viewpoint corroborates our call (Section *4.3.2*) for considering mobile technology as 'an interface to a technological ecosystem' (Whyte, 2020, p. 432). Additionally, Whyte (2020) stated that 'the smartphone is a convenient interface in the new forms of work, across the formal and informal economy, including the new forms of work variously described as 'microwork', 'crowdsourcing', or 'the sharing economy'' (p. 433). Thus, this recent statement substantiates our aforementioned and precursor claim with regards to mobile technology which should be more given due consideration by SME managers as a 'catalyst for creativity and collective engagement' (Section *6.2.7.2*).

CHAPTER 7 – Discussion/Conclusions/Implications

'*The most important work in the new economy is creating conversations*' –Alan Webber, former editor of the Harvard Business Review, 1993.

7.1 Preface

In general, conversations are tactics and processes through which people exchange, understand, and shape what they know (Isaacs, 1993, p. 4). For a digital transformation to take place, organisations, and more specifically SMEs, need to change their approach to knowledge (co)creation and to work with each other (WEF/Schwab, 2016). Meanwhile, von Krogh et al. (2000) prescribed five enabling attributes (see Section *3.1.5*) that 'help to increase dissemination of information throughout an organization and to dismantle the barriers to communication. Second, the enabler connected most closely with relationships and care in the organization –manage conversations– strongly affects all five knowledge-creation steps' (p. 9). They added that 'effective knowledge creation depends on an enabling context. What we mean by enabling context is a shared space that fosters emerging relationships' (p. 7).

Also, ease of access to information and its comprehension depends on the level of engagement of the person, consequently taking a participatory approach such as through mobile social media (Jenkins, 2013; Slay & Stephens, 2013), can enable faster and better decision making. Rich-media devices (smartphones) can foster interaction and inclusiveness (extending formal language syntax) (Bathelt & Turi, 2014). In comparison, Barrico (2014) reflected on technological innovation (mobile technology) as having 'a decisive impact: those that have compressed space and time, tightening the world' (p. 219). Thus, to better understand the formation of creativity, knowledge creation, and innovation, we explored practical approaches to inconclusive, ambiguous, and 'constantly evolving human realm of knowledge' (von Krogh et al., 2000, p. vii) through the lens of digital means. Similarly, Lansmann & Klein (2018) used a relevant metaphor, 'the organisational and managerial framing conditions can be viewed as an 'engine' and technology as the 'fuel' to enhance the speed of an enterprise, leading to individual consequences for the workforce' (p. 10). However, they stressed that if not handled cautiously, technology could lead to a collaborative overload.

Due to its expeditious and exponential evolution and growth (Moore's law), it is difficult to identify the benefits or disadvantages of mobile technology. Thus, instead of a quantitative method which might be too factual (3G

vs 4G vs 5G, for example), we selected a qualitative methodological approach with a sociological, behavioural, and linguistic observation of users, and interactions with experts.

7.2 Summary of the Conclusions of the Publications

> *The more we understand the nature of our innovations and the impacts they are having on our lives and economy, the better decisions we will make on how to use them.* –MIT Technology Review - *fwd: Economy*, April 2019.

This research investigated the notion of the "complex system" (Héraud et al., 2019) with explicit and tacit knowledge (Nonaka & Takeuchi, 1995; von Krogh et al., 2000, p. 6; Amin & Cohendet, 2004), weak signals (Schoemaker & Day, 2009), geo-located information (environment) (Parmentier et al., 2017), knowledge exchange, transfer and sharing (Paulin & Suneson, 2015; Levallet & Chan, 2019) between eclectic collaborators (learning) (Cohen & Levinthal, 1990; Majchrzak et al., 2013). The research provides us with insights about mobile technology through 'seemingly random or disconnected piece of information that at first appears to be background noise but can be recognized as part of a significant pattern by viewing it through a different frame or connecting it with other pieces of information' (Schoemaker & Day, 2009, p.86) and could be defined as knowledge angel (Muller et al., 2015).

Essential competitive advantages for CI SMEs are their capacity to generate ideas, rapidly conceive new concepts, and produce innovative solutions. Mobile technology can enable a complementary or supplementary framework to satisfy needs outside time and space limits. In addition, the *ba mobile* findings reveal a contemporary approach to the *ba* and *SECI model* developed by Nonaka & Konno (1998) that relates to the concept of absorptive capacities (Cohen and Levinthal, 1990), which refers to organisational competencies to identify, assimilate, and integrate external knowledge into an organisation (SME). In a KI environment, the *ba mobile* discoveries are particularly relevant to the *exploration*, or towards the end of the *exploitation* (dissemination) (Schumpeter, 1934; March, 1991), phases of a project. This aligns with ADPRI (May 2019) which demonstrates that worker engagement is not reliant on physical proximity to their team colleagues, and within a regular week, distant workers are 'almost twice as engaged as those who do so less than one day a week'.

The *m-collaboration* (mobile collaboration) findings reveal that knowledge and know-how are related to a collaborative innovation approach (Demil & Lecocq, 2012; Suire et al., 2018). Within a *glocal* networked

environment, characterised by a high level of uncertainty, mobile technology enables exploratory and collective practices and grows creative slack (Cohendet et al., 201) or sideground (Mc Nerney, 2009).

In KI organisations, mobile technology is a key interface between people and processes in innovative practices and facilitates organisational learning. While Cavazotte et al. (2014) identified managerial power issues and challenges with mobile devices and variations between workers' professional and personal lives, this research provides decision-makers with a framework that provides an understanding of how organisational actors can use mobile technology as part of their creative slack strategy, the *m-slack* strategy in a fast and competitive environment.

	[INFORMANTS]	[SECTOR]	[COMPANY SIZE]*	[STATUS]	[MODE]
Aotearoa/New Zealand	A	Telecommunication	< 10,000 staff	Manager	Site/Café
	H	Creative writing	SME	Self-employed	Off-site
	M	Hospitality	SME	Manager	Site/Café
	T	Education	< 10,000 staff	Manager	Site
	V	Education	< 10,000 staff	Manager	Site
France	C	Webdesign	SME	Self-employed	Videoconference
	L	Event Management	SME	Self-employed	Off-site
	N	Contemporary Arts	< 10,000 staff	Employee	Site

*A Small and Medium-sized Enterprise (SME) is composed of less than 250 employees (definition of the European Commission).

Table 7.1 Summary of the participants' profile (see CHAPTER 2 & Appendix 7).

Table 7.1 summarises participant profiles (see Section *2.2*, *Phase 1*, *2* & *3*). Through open discussions with experts in their fields in Aotearoa New Zealand, France, and Japan, we have identified weak signals, hidden habits, and unconscious behaviours or routines. From the preliminary findings, transdisciplinary literature reviews that cross-referenced the ten years of experience of the researcher with mobile technology were undertaken. The results are illustrated in Table 7.2 to Table 7.4.

Table 7.2 (below) presents the initial findings for *ba mobile*, a shared space that can accommodate online *Socialisation* (Nonaka & Takeuchi, 1995), see *CHAPTER 4*. While three major limitations with mobile technologies were identified, namely *hyperconnectivity*, *infobesity*, and *addiction*, four attributes that allow mobile phone users to express their creativity, share content or information, and collaborate remotely regardless of location and time zone were identified; *autonomy*, *diversity*, *interactivity*, and *openness*.

		Aotearoa/New Zealand				France		
		T	V	M	A	L	C	N
[ATTRIBUTES]	AUTONOMY	+	+	+	+	+	+	+
	DIVERSITY	+	+	+	+	+		+
	INTERACTIVITY	+	+	+	+	+	+	+
	OPENNESS	+	+					+
[LIMITATIONS]	ADDICTION		−			−	−	−
	INFOBESITY	−		−			−	
	HYPERCONNECTIVITY	−	−	−	−	−	−	−

Table 7.2 Characteristics of mobile technology in relation to the ba mobile *(see* CHAPTER 4*).*

Table 7.3 presents the second set of results for the *m-collaboration*, described in *CHAPTER 5*. While a pattern in the limitations in mobile technologies (*hyperconnectivity*, *infobesity*, and *addiction*) was noted, we discovered four new attributes, *immediacy*, *ubiquity*, *interactivity*, and *contextuality*, enabling workers to collaborate and create knowledge beyond the firm.

		Aotearoa/New Zealand				France		
		T	V	M	A	L	C	N
[ATTRIBUTES]	IMMEDIACY	+	+	+	+	+	+	+
	UBIQUITY	+	+	+	+	+	+	
	INTERACTIVITY	+	+	+	+	+	+	+
	CONTEXTUALITY	+	+		+	+		±
[LIMITATIONS]	ADDICTION		−			−	−	−
	INFOBESITY	−		−			−	
	HYPERCONNECTIVITY	−	−	−	−	−	−	−

Table 7.3 Characteristics of mobile technology in relation to collaborative and innovative practices (see CHAPTER 5*).*

Finally, Table 7.4 provides a summary of the limitations and attributes mentioned above. The characteristics reflecting attributes defined by Ahonen (2011) are classified into two categories, blocking and boosting effects. In blocking, both through *ba mobile* and *m-collaboration*, ethical questions about the use of mobile devices (etiquette), and their pervasiveness and intrusiveness in professional and private life (*privacy*) are raised. On boosting, in *ba mobile* and *m-collaboration*, mobile technology enables quick decision-making, simplified communication with emoji or pidgin, a certain authenticity in online interactions and exchange, and connection to local, territorial, national, international or transnational networks for sharing information, know-how, knowledge (*glocal* network), and collective intelligence (Lévy, 1999; Shirky, 2011) that fosters competitive agility for SMEs (collective innovation).

We found that for SMEs, mobile technology provides the conditions for collective intelligence and enhances (co)creation during the phases of intuition (*exploration*) and marketing (dissemination) (for further details, please refer to Section *4.2.6.2*). Note that the 'easy' feature means that mobile devices are always turned on, in people's pockets or near their hands, as well as offering simple and friendly access to tools and fittings.

[CHARACTERISTICS]		[PARTICIPANTS]						
		Aotearoa/New Zealand				France		
		T	V	M	A	L	C	N
[BOOST]	QUICK DECISION-MAKING	+	+	+	+	+	+	+
	EASY*	+	+	+	+	+	+	+
	AUTHENTICITY	+	+	+	+		+	
	GLOCAL NETWORK	+	+	+	+	+	+	±
	COLLECTIVE INNOVATION	+	+	±	+	+		±
[BLOCK]	ETIQUETTE	±	±	±				−
	PRIVACY	−					±	−

*Fit in hand, always connected, affordance

Table 7.4 Global characteristics of mobile technology in relation to knowledge creation (see CHAPTER 6).

Thus, mobile technology enables the transformation of traditional forms of innovation management, that favours forms of organisational continuity rather than human continuity, by providing interactive, quick, and authentic engagement experiences. Deloitte (2017) phrased it as, 'remaining a spectator is therefore no longer

an option', and this thesis demonstrates that mobile devices can support the current change of working environment and needs of a nomadic population (Duperrin, 2015), non-office based workforce in CIs, due to the COVID19 pandemic.

Additionally, we singled out mobile technology that meets the four principles for co-design: '1) Sharing power (decision-making), 2) Prioritising relationships (social connections, trust), 3) Participatory means (prosumers, audio-video approaches), 4) Building capability (trust and setting up a learning environment)' (Slay & Stephens, 2013, p. 3). Nevertheless, mobile technology, like any technological object, acts like a 'pharmakon' (Derrida, 1968). It can be as much a remedy (attributes or boost) as a poison (limitation or block). It all depends on the way it is used. Therefore, the next section provides insights into the meaning and potential implications of our findings.

7.3 Theoretical Implications

This transdisciplinary research extends the literature on innovation in KM and ICT. We demonstrated knowledge management novelty in mobile technology that enhances a new and digital form of *ba*. Extending Nonaka and Takeuchi's *SECI model* (1995) that provides an equivalent of F2F interaction within the *Socialisation* phase (*Originating ba*), by enabling neoteric digital collaborative practices. We showed organisational innovation newness by presenting mobile technology as a pertinent intercessor in the process of a cognitive shift toward the formation of collaborative and innovative organisational practices. The shift fosters atemporal and dynamic interactions beyond the boundaries of any specific environment. Cohendet et al.'s concept of creative slack (2010) and Cunha's definition of *bricolage* formed the basis for creativity management originality and through that we showed that mobile technology can be a catalyst for knowledge and value creation, providing the conditions for creative slack growth and resourcefulness.

In summary, Table 7.5 presents perspectives on mobile technology as a space for knowledge creation (the *ba mobile*), a course of action for knowledge construction and interaction (the *m-collaboration*), and a mindset for knowledge production and excogitation (the *m-slack*). Thus, remembering the OECD definition of innovation, we argue that this research contributes to an understanding of process innovation, which is 'a new or significantly improved production or delivery method', and enables organisational innovation, which is 'a new organisational method in business practices, workplace organisation or external relations' (Oslo Manual, p. 75).

In Table 7.5, the bottom row highlights areas of future research in mobile technology and productivity and are discussed in Section *7.5*. Focus areas are the *glocal* network (see *CHAPTER 4*), collective innovation (see *CHAPTER 5*) and creative slack (see *CHAPTER 6*).

	[BA MOBILE] mobile = middleground enabling space beyond F2F connection	[m-COLLABORATION] mobile = intercessor thriving interactions between people	[m-SLACK] mobile = catalyst fostering knowledge & value creation
[ATTRIBUTES]	AUTONOMY DIVERSITY INTERACTIVITY OPENNESS	IMMEDIACY UBIQUITY INTERACTIVITY CONTEXTUALITY	FLEXIBILITY BRICOLAGE SOCIAL CAPITAL AFFORDANCE
[LIMITATIONS]	ADDICTION INFOBESITY HYPERCONNECTIVITY	ADDICTION INFOBESITY HYPERCONNECTIVITY	CULTURE ENGAGEMENT COMPETITIVENESS
[FUTURE]	GLOCAL NETWORK / PRODUCTIVITY	COLLECTIVE INNOVATION / PRODUCTIVITY	CREATIVE SLACK / PRODUCTIVITY

Table 7.5 Synthesis of the key findings of this research in relation to mobile technology and potential forward-looking explorations (see CHAPTER 4, 5, 6 *and* 7)

7.4 Managerial Implications

'*In fact, the term management implies control of processes that may be inherently uncontrollable or, at the least, stiffed by heavy-handed direction*' (von Krogh et al., 2000, p. 4)

This research provides a model and recommendations for the effective implementation (fertilisation from design to management) of mobile technology. The use of mobile technology by prosumers in CIs (Jenkins, 2013) represents a shift from a transactional to a transformational working environment. These findings contribute to gaps highlighted by Chesbrough et al. (2014) who said that to create new open business models, then the focus should shift from one-on-one relations between innovation partners to more complex settings of partnerships. However, Chesbrough et al. (2014) highlighted the challenges that startups face in managing and funding open innovation platform strategies (see *CHAPTER 4*). Meanwhile, the rate of innovation and the

introduction of new technologies is increasing and administration, governance and operations of technology and people are being challenged by these technologies. The transformation of the organisation within a complex system (Héraud et al., 2019) is underpinned by the adoption of new technologies, and this research provides ways that the attributes of mobile technologies are used as a tool for effective and efficient collective action in OL. Technology is a cultural artefact that impacts most company functions.

Innovation happens more through connections and networks than individual creativity and *acumen* (Fleming & Marx, 2006). New technologies like mobile technology have the power to shift company boundaries and the company needs to change to meet the new frontier as the outside world encroaches (Chesbrough et al., 2014). Mobile technology enables the fluidity of exchanges and provides access to information with the flexibility to (en)act. The 'outside-in' process is important for SMEs (Cohen & Levinthal, 1990; Grandinetti, 2016) because the requirement for globalised collaboration annihilates geographic boundaries. This research argues that mobile technology enables the conditions for dynamic innovation networks to emerge and extend beyond the company's borders.

> *Making networks more decentralised is another way to improve collaboration and performance* (McKinsey & Company survey on innovation, 2007)

This research offers avenues for 'facilitating relationships and conversations as well as sharing local knowledge across an organization or beyond geographic and cultural borders' (von Krogh et al., 2000, p. 4). Also, 'although managers can certainly influence the process, they may need to reassess their own work style and social interactions' (von Krogh et al., 2000, p. 17). Mobile technology encourages the development of the entrepreneurial mind by talking and sharing great ideas with great minds (EIT Innovation forum, Report 2015). To get new ideas and feedback on their own ideas, 46% of professionals surveyed have said 'they were far more likely to seek out a trusted colleague than an expert or manager' (McKinsey & Company, 2007).

7.4.1 Informed Decision-Making

This research aims at supporting managers to design an ecosystem composed of processes and people that use mobile technology to achieve a goal while keeping its limitations and challenges in mind. This ecosystem includes managers and leaders involved in the decision-making process, and open the process workers and advisers. The ecosystem ensures a diversity of approaches that is multidisciplinary, and unbiased towards age, sex, experience, beliefs, and so on. Without such diversity prevents preparation for the unexpected and is barely innovative. Such an approach may be seen as a threat or confusing for managers that are used to being

in charge and making rational decisions (von Krogh et al., 2000, p. 10).

Increasing awareness of the use and application of mobile technology through a circulation of intelligence (France Stratégie, 2017) is an important factor in the knowledge or innovation economy. The research provides the means for managers to structure a knowledge ecosystem through the meeting of independent information and collective innovation. Mobile technology fosters a culture of continuous improvement through *autonomy*, *openness*, *immediacy*, and *ubiquity*. However, this research concurs with Simon (1971) who said that 'a wealth of information creates a poverty of attention, and a need to allocate efficiently among the over-abundance of information sources that might consume it' (pp. 40-41). In KI firms, information quantity and quality are pivotal in making-decision, where infobesity creates challenges like the poverty of attention (Boullier, 2013) and counter-productivity (Brynjolfsson & Van Alstyne, 2007; Cecere & Ozman, 2014).

7.4.2 Team Experience beyond Team Location

Looking through the lens of local versus global, rather than by proximity, worker engagement is strongly associated with team dynamics (Lewin, 1947; Cross et al., 2008) and relations (Lévy, 1999) or connections (Latour, 2005-15). Mobile technology creates opportunities for workers to apply complementary strengths to increase impact, cooperation and communication across organisational and company boundaries (EIT Innovation forum, Report 2015). Thus, by finding ways to combine and leverage effort (von Hippel, 2013) by engaging in direct, indirect, formal, and informal collaboration in networks and CoI/CoP, mobile technology increases the ability of team leaders to engage team members in real-time. As a result, mobile technology enables team leaders to understand, encourage, and facilitate team members.

Technology and the social order cannot be considered apart, where the dynamic relationships that are expressed between the two lead to affordance and adoption, providing both social and economic benefits to stakeholders (Kannan et al., 2019). This is reflected in management planning to incorporate mobile technology within the organisational culture and their own managerial practices. Furthermore, the concept of the congruence model as an open and dynamic system (O'Reilly & Tushman, 2011), the nature and pace of innovation leans toward a larger ecosystem, with a need to navigate complex relationships between actors, groups, and companies. Therefore, the key innovation challenge for SMEs is in managing informal social networks within an emerging but formal structure (Smith & Tushman, 2005).

7.5 Limitations and Future Developments

The emerging and constantly evolving nature of mobile technology, its apparatus (mobile devices), and infrastructure make it difficult to obtain empirical results. Constant change across domains limits understanding of the evolution of mobile technology, but while some findings in this research are not statistically significant, the research reveals larger manifestations and patterns of dynamic work or collaborative activities.

Methodologically, this thesis applied an ethnographic and hermeneutics qualitative approach. The interpretivist results could be strengthened by using another approach like multiple case analysis, a quantitative method, or both. Moreover, while cognitive bias was avoided, the research is limited to cognitive differences and language interpretation. To ensure minimal impact of bias, triangulation of the core data provides neutrality with feedback from professional experts, reference to industry-based reports, and academic publications. Additionally, the research gains from expanding its primary sources from individuals, organisations, regional clusters, and institutions in Aotearoa New Zealand, France, and Japan.

Rather than addressing the notion of productivity or efficiency, this thesis points to the *glocal* network, collective innovation, and creative slack (Table 7.5). While this has been considered, it is not embraced due to economic factors (rather than managerial). Therefore, this research provides a comprehensive basis for potential empirical avenues and four opportunities have been identified. First, to comprehend some productivity factors within a specific environment or team, to use technology to collect data about technology use, such as mobile GPS tracking of a consenting group of employees and to monitor their work activities in relation to their surroundings. Also, to provide an organisation with insights on motivation, creative-thinking skills, and expertise (Amabile, 1998), to use a software tool such as *NVivo* for the qualitative data analysis of online exchanges of a group of collaborators, looking for emotion, their level of competency, and networks.

Similarly, facial recognition technology in association with meetings or mobile-based activities can be used to measure the emotional impact of information on workers. This enables an immediate appreciation of the level of engagement of workers or employees. Or a media analysis (*Slack*, *Messenger*, *Instagram*, *LinkedIn*, *WeChat*, *Yammer*, and more) provides further understanding of how and when team members are working together, and insights about investment efficiency by a measure of *Return On Innovation Investment* (ROII, based on Dupont's model). ROII considers the ratio between explored ideas and total capital and operational costs for an SME. This approach supports managers in their efforts to change or improve routine and make decisions about investment priorities.

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Appendix 1 – Authorship details

References	Writing	Empirical data	Research design	Literature review	Methodology	Discussion	Conclusion
[m-SLACK] Antonczak. L. & Burger-Helmchen. T. [under revision]. Creativity on the move: nexus of technology, slack and social complexities. *Revue d'Économie Industrielle (REI)*.	X	X	X	X	(x)	(x)	X
[m-COLLABORATION] Antonczak. L. (2021). Mobile Technology: innovative and creative practices enabling learning environments in Higher Education & Business. *The 4th Scholarship of Technology Enhanced Learning (SoTEL) Symposium*. February 18-19. Auckland.	X	X	X	X	X	X	X
Antonczak. L. & Burger-Helmchen. T. (2021) [in press]. Being mobile: a call for collaborative innovation practices?. *Information and Learning Sciences (ILS)*.	X	X	X	(x)	X	X	X
[BA MOBILE] Antonczak. L. (2020). Mobile technology: a new ba of work organisation?. *Innovations - Journal of Innovation Economics & Management*, 31(1), 11-37.	X	X	X	X	X	X	X
Antonczak. L. (2019). Scaling-up collaborative practices through mobile technology. *The 25th International Conference on Engineering/International Technology Management Conference (ICE/ITMC)*, June 17-19. Nice.	X	X	X	X	X	X	X

209

A FULL OVERVIEW OF THE EVOLUTION OF MOBILE PHONES FOR THE PAST 10 YEARS

The impact that the invention and evolution of mobile phones has had on the world is unprecedented and impressive, which is why I think we should all take a minute to look back and appreciate this incredible piece of technology that has managed to make our lives so much easier.

MOBILE MARKET STATISTICS

More than half of mobile users own a smartphone

Statista has stated that the amount of mobile phone users will reach the 4.9 billion worldwide in 2018. This will be due to the ever-growing popularity of smartphone usage, predicted to reach as much as 2.5 billion in 2019. This means that in 2019, more than half of all mobile users will be first-time smartphone users.

2.9 billion
4.9 billion

2019 2018

ASIA PACIFIC PROVES TO BE THE CENTER OF MOBILE SUBSCRIBER GROWTH

China and India are the home of over **1 billion** of mobile subscribers and these subscribes account for about **50%** of mobile subscriber growth from **2017 to 2020.**

In July of this year, Counterpoint's Market Pulse reported that Huawei surpassed Apple's percentage of global smartphone sales for the first time in history, making Huawei the second largest smartphone company in the world. Huawei's new found popularity seems to be linked to their larger displays and more advanced camera functions.

ANDROID TOPS WINDOWS AS THE LEADING OPERATING SYSTEM

StatCounter reported that Android surpassed Windows as the world's most used OS in 2018, with a global share of

37.93%

This growth is due to growing markets where the use of smartphones exceeds PC usage, most specifically in Asia.

ADAPTIVE WEB DESIGN IS APPLIED TO 80% OF THE TOP ALEXA WEBSITES

MobiForge showed that **80%** of Alexa's top 100 websites applied the use of Adaptive Web Design (AWD) or server-side adaptation so that their websites would be able to adjust to different kinds of devices.

Conversions drop as bounce rates sky-rocket for each second it takes your page to load.

Compass' recent research has found that bounce rates can grow to as much as **50%** if the website takes two extra seconds to load. Conversions can decrease by **12%** for every second of loading time, as well. This means that if your business is receiving **$100,000** revenue from its website on a daily basis, then improving the speed of the page by one second can increase your revenue to **$4.3 million** a year.

TIME INVESTED ON MOBILE DEVICE USAGE CONTINUES TO INCREASE

In 2017, digital use increased to **5.7 hours** a day, which represented a **0.3 hours** or **18 minutes** increase from **2016.** This offsets, at least in part, the decrease of desktop and laptop usage.

THE VALUE OF MOBILE ADVERTISING RISES TO $83 BILLION

According to the latest information released by the Internet Advertising Bureau (IAB), mobile advertising continues to grow and accelerate to **60.5%** to **$83 billion** in 2016, **$31 billion** more than in **2015**.

78% OF SHOPPERS WON'T ACT ON AN OFFER IF IT'S NOT PERSONALIZED

When it comes to traffic, mobile technology is the king of e-commerce efforts. The problem is that retailers haven't figured out how to turn devices into a conversion point.

According to Monetate, **78%** of clients won't act on an offer if it's not personalized based on their history with the company.

NUMBER OF MOBILE PHONE USERS WORLDWIDE
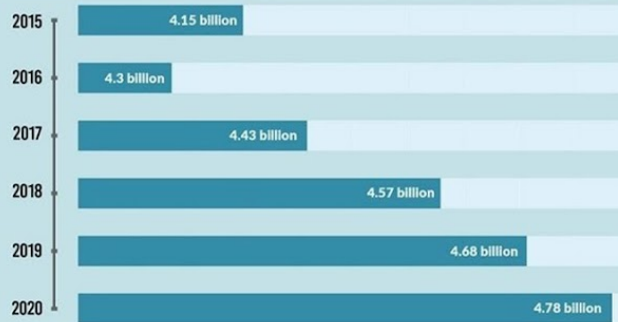
Year	Users
2015	4.15 billion
2016	4.3 billion
2017	4.43 billion
2018	4.57 billion
2019	4.68 billion
2020	4.78 billion

Notable Facts

The number of worldwide mobile phone users is expected to surpass the **5 billion** target by **2019**.

Mobile phone insertion will continue to grow, to an estimated **67%** by **2019**.

Notable Facts

The number of worldwide mobile phone users is expected to surpass the **5 billion** target **by 2019.**

Mobile phone insertion will continue to grow, to an estimated **67% by 2019.**

In 2018, it's estimated that **62.9%** of the world's population will already own a mobile phone.

It is expected that **in 2019**, China will reach **1.5 billion** mobile connections and India's will grow to **1 billion.**

In the span of five years, the amount of worldwide smartphone users will grow by **1 million,** which means that by **2019** it will reach **2.7 million**

Workforce nowadays relies more on mobile devices than ever before.

81% of workers want to trade the **9 to 5** work culture for more flexible hours and locations.

70% of professionals will use their mobile devices to conduct their personal and professional business **by 2018.**

In order to stay ahead of the competition, companies need to be innovative and adjust to the ever-changing market.

70% of organizations collaborate with others on a regular basis.

THE POSSIBILITIES OF THE FUTURE TECHNOLOGY OF MOBILE PHONES

touch and pay

YOUR PHONE WILL RECOGNIZE YOU

Improving device security from the pesky PIN is something that device manufacturers have been working on for years. This is evidenced by the fact that many devices now feature fingerprint or iris scanners, but both have been proven to be hackable.

213

IT WILL BE POSSIBLE TO SHIFT REALITY WITH YOUR PHONE

One of the many possibilities of the evolution of the smartphone is that you will be able to go through your phone and see how a clothing item would look on you or somebody else, or how a new lamp would look in your office.

MORE DURABLE AND FLEXIBLE MOBILE PHONES

In a few years, mobile phones will become difficult to break and it's possible that it will be possible to fold it up. According to Fortune, because of the hype about flexible smartphones, it could be the year that one finally hits the market.

USE OF VIRTUAL BUTTONS AND ASSISTANTS

Screen size has been continuously expanding for years on the smartphone, and it's likely that the design of the future will be most likely just a screen that can be manipulated from all sides of the device without help of physical buttons.

ACCESS FOR EVERYONE

Internet access has become vital and mobile phones are more affordable than desktop computers. They also consume less power, they're portable, and they have a built-in monitor and keyboard. The device also provides personal and at-home Internet access whenever it's necessary.

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http://www.totalcomm.ca/mobility-changing-business-2018-infographic/

Review Pen.com

Source: https://tfetimes.com/a-full-overview-of-the-evolution-of-mobile-phones-for-the-past-10-years/

Appendix 3 – Shortlist of the 108 references with publications details, and keywords

Black = short-listed | **Black bold = key idea, or good pertinence**

Grey = not short-listed | **Grey bold = key idea**

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1. Baird, A., & Maruping, L. M. (2021). The Next Generation of Research on Is Use: A Theoretical Framework of Delegation to and from Agentic Is Artifacts. *MIS Quarterly*, *45*(1), 315–341. https://doi-org.scd-rproxy.u-strasbg.fr/10.25300/MISQ/2021/15882

*Information systems (IS) use, the dominant theoretical paradigm for explaining how users apply IS artifacts toward goal attainment, gives primacy to human agency in the user--IS artifact relationship. Models and theorizing in the IS use research stream tend to treat the IS artifact as a passive tool; lacking in the ability to initiate action and accept rights and responsibilities for achieving optimal outcomes under uncertainty. We argue that a new generation of "agentic" IS artifacts requires revisiting the human agency primacy assumption. Agentic IS artifacts are no longer passive tools waiting to be used, are no longer always subordinate to the human agent, and can now assume responsibility for tasks with ambiguous requirements and for seeking optimal outcomes under uncertainty. To move our theorizing forward, we introduce delegation, based on agent interaction theories, as a foundational and powerful lens through which to understand and explain the human--agentic IS artifact relationship. While delegation has always been central to human--IS artifact interactions, it has yet to be explicitly recognized in IS use theorizing. We explicitly theorize IS delegation by developing an IS delegation theoretical framework. This framework provides a scaffolding which can guide future IS delegation theorizing and focuses on the human--agentic IS artifact dyad as the elemental unit of analysis. The framework specifically reveals the importance of **agent attributes relevant to delegation** (endowments, preferences, and roles) **as well as foundational mechanisms of delegation** (appraisal, distribution, and coordination). Guidelines are proposed to demonstrate how this theoretical framework can be applied toward generation of testable models. We conclude by outlining a roadmap for mobilizing future research.*

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2. Benlian, A. (2020). A Daily Field Investigation of Technology-Driven Spillovers from Work to Home. *MIS Quarterly*, *44*(3), 1259–1300. https://doi-org.scd-rproxy.u-strasbg.fr/10.25300/MISQ/2020/14911

*Although recent theoretical developments and empirical studies indicate that technology-related stress may have negative and positive consequences for employees across life domains, the majority of previous IS research on technostress has focused on its downsides at work and has neglected to study how and why technology-related stress may spill over from work to home. Furthermore, while much of our knowledge of technology-related stress and its effects derives from cross-sectional studies examining between-person differences, there is a need for longitudinal, daily investigations that take a within-person view. Integrating the challenge–hindrance stressor framework with affective events theory and work–home spillover literature, we propose a broader conceptualization of technology-related stressors, referred to as technology-driven (TD) stressors, which comprise technology-driven challenge (TCS) and hindrance (THS)stressors, **and examine how and why daily TCS and THS experienced at work affect the relationship between employees and their partners at home.** In an experience sampling study of 115 employees who responded to daily surveys both at work and at home over a two-week period, we found that while THS are negatively related to partnership satisfaction via negative affect, TCS are positively related to partnership satisfaction via positive affect. We also investigated the moderating effect of work–home role integration (WHI) and perceived organizational support in work–home boundary management (POS) on the strength of the within-individual spillover processes. Our results show that WHI acts as a double-edged sword forletting TCS- and THS-triggered positive and negative affect spill over to partnership satisfaction, whereas POS serves as a facilitator of positive affect and as a buffer against negative affect. Broadly, our study shows that understanding daily TD work stressors is important because their negative and positive downstream effects often do not stop at employees' workplace boundaries but actually penetrate and shape their everyday lives at home.*

3. Salo, M., Makkonen, M., & Hekkala, R. (2020). The Interplay of It Users' Coping Strategies: Uncovering Momentary Emotional Load, Routes, and Sequences. *MIS Quarterly*, *44*(3), 1143–1175. https://doi-org.scd-rproxy.u-strasbg.fr/10.25300/MISQ/2020/15610

Despite the positive aspects of information technology (IT) use, it is common for **users to experience negative IT incidents**. *Examples of negative IT incidents include getting lost in an unfamiliar country due to a dysfunctional map application and missing a monetary insurance benefit due to the failure of an activity tracker application. Such incidents can harm IT providers by giving rise to user dissatisfaction, discontinued use, switching, and negative word-of-mouth. To minimize this harm, it is important to understand how users cope after negative incidents. Specifically, information systems (IS) researchers have called for research that uncovers the complex interplay of IT users' coping strategies (e.g., users' coping efforts after employing one strategy and combinations of several consecutive strategies). To address these calls, we conducted a mixed methods study that examined mobile application users' coping strategies after highly negative incidents. We developed a model that explains how users navigate between problem-focused strategies, emotion-focused strategies, and appraisals. As theoretical contributions, we identify coping sequences and distinct routes from the coping strategies, uncover the role of momentary emotional load, and present IT-specific insights. As practical implications, we identify favorable.*

4. Kretschmer, T., & Khashabi, P. (2020). Digital Transformation and Organization Design: An Integrated Approach. *California Management Review*, *62*(4), 86–104. https://doi-org.scd-rproxy.u-strasbg.fr/10.1177/0008125620940296

The widespread implementation and adoption of digital technologies by organizations has given rise to a massive transformation with the potential to affect many organizations' internal operations and processes. This transformation affects different levels and steps of output creation in companies, which eventually triggers changes in their organizational structures. ***This article develops an integrated picture on how digital transformation affects organization design by classifying and analyzing the effect on the process of output creation in firms.*** *Based on this picture, it develops and elaborates on potential opportunities and challenges for companies resulting from digital transformation. Finally, it offers recommendations and decisions rules for dealing with these issues.*

5. **Alvarez, S. A., Zander, U., Barney, J. B., & Afuah, A. (2020). Developing a Theory of the Firm for the 21st Century. *Academy of Management Review*, *45*(4), 711–716. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/amr.2020.0372**

The article discusses the theory of the firm, or business enterprises, throughout the 21st century, including firm ownership, value creation and uncertainty. Other topics include business management, the use of artificial intelligence in business, incentives in industry and the social aspects of businesses.

6. Califf, C. B., Sarker, S., & Sarker, S. (2020). The Bright and Dark Sides of Technostress: A Mixed-Methods Study Involving Healthcare It. *MIS Quarterly*, *44*(2), 809–856. https://doi-org.scd-rproxy.u-strasbg.fr/10.25300/MISQ/2020/14818

Today's healthcare workers, specifically nurses, are experiencing technostress associated with the use of healthcare information technology (HIT). Technostress is often characterized by IS researchers as negative, or as being on the "dark side" of technology. However, a broader reading of the stress literature suggests that technostress may be both positive and negative, and can therefore have a "bright side" in addition to a dark side. The objective of this study is to conceptualize a holistic technostress process that includes positive and negative components of technostress embedded in two subprocesses: the techno-eustress subprocess and the techno-distress subprocess, respectively. The study instantiates this holistic technostress model through a sequential mixed-methods

research design in the context of HIT. Phase 1 of the design is a qualitative, interpretive case study involving interviews with 32 nurses. Based on the findings from the case study, the paper builds a research model that operationalizes the concepts embedded in the holistic technostress model and identifies contextually relevant challenge and hindrance technostressors and outcomes. In Phase 2, the research model is empirically validated by analyzing survey data collected from 402 nurses employed in the United States. Results reveal that several challenge and hindrance technostressors are related to positive and negative psychological responses, respectively, and that such responses are related to job satisfaction and attrition, which impact turnover intention. Contributions to theory and practice are also discussed.

7. Kuem, J., Khansa, L., & Kim, S. S. (2020). Prominence and Engagement: Different Mechanisms Regulating Continuance and Contribution in Online Communities. *Journal of Management Information Systems*, *37*(1), 162–190. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/07421222.2019.1705510

*Online communities have suffered from their members' intermittent, dormant, or nonexistent participation. We propose that prominence, which refers to the salience of community members' psychological proximity to their community, differs from the engagement construct, which denotes a psychological dedication to behave prosaically toward other community members. Whereas engagement has been increasingly examined as a driver of online community behavior, the role of prominence has received a minimal amount of attention in the literature. Drawing on self-determination theory, we developed a framework that proposes the prominence construct as a phenomenon distinctive from engagement in its nature, formation, and behavioral outcomes. Our findings based on two studies indicate that the proposed model with prominence performs considerably better than the existing model with only engagement. Our conceptual model contributes to Information Systems research by laying a strong theoretical foundation to differentiate between the behavioral paths of the autonomous prominence construct and its controlled **engagement** counterpart.*

8. Rahrovani, Y., & Pinsonneault, A. (2020). Innovative IT Use and Innovating with IT: A Study of the Motivational Antecedents of Two Different Types of Innovative Behaviors. *Journal of the Association for Information Systems*, *21*(4), 936–970. https://doi-org.scd-rproxy.u-strasbg.fr/10.17705/1jais.00625

*The paper distinguishes two different types of innovative behaviors involving information technology (IT): innovative IT use (IU) and innovating with IT (IwIT). While the former focuses on changing the technology and the work process to better support one's existing work goals, the latter focuses on using IT to develop new work-related goals and outcomes. Drawing on Parker's theory of proactive behavior, this paper compares the motivational antecedents and consequences of these two innovative behaviors enabled by IT. Our model hypothesizes that three generic types of motivation differentially affect IwIT versus IU. **The paper also explores the moderating role of slack resources on the effect of motivation on the two innovative behaviors.** Data from a survey of 427 IT users from North American companies show that social motivation affects IwIT (but not IU); intrinsic motivation is positively related to IU (but not IwIT); and internalized extrinsic motivation affects both IU and IwIT. Further, the results indicate that the moderating role of slack resources on different motivational paths is not a one-size-fits-all effect, that is, slack in IS resources only moderates the relationship between intrinsic motivation and IwIT. We also differentiated the consequences of IwIT from IU. The post hoc analysis shows that IwIT is significantly related to individual mindfulness at work, but IU is not. The paper contributes to IS research by offering a rich conceptualization of IwIT and examining its motivational antecedents and consequences in comparison to IU.*

9. Dunn, B. K., Ramasubbu, N., Galletta, D. F., & Lowry, P. B. (2020). Digital Borders, Location Recognition, and Experience Attribution within a Digital Geography. *Journal of Management Information Systems*, *37*(2), 418–449.

During an online session, a user may visit a number of websites, often following hyperlinks from one website to the next or using a search results page to find and visit pages of interest. In doing so, the user can lose track of which sites were visited and which were helpful in meeting the objective. Thus, sites that may have provided value to the user may not receive expected positive effects such as loyalty and intention to return. It is thus crucial to understand if and how an individual website is perceived by users within the context of multi-website online sessions—particularly in predicting desired outcomes, such as user loyalty, trust, brand image, and revisit intentions. To address this problem, we conceptualize the Web as a geography traversed by users who cross digital borders as they move from one website location to another. We introduce the concept of border strength, or the degree to which digital media artifacts mark a transition to a website, and propose a positive effect of border strength on users' recognition of their locations. We then consider users' attribution of credit for assistance in successfully completing an online task to those websites and their owners that supported the task. This attribution is a function of border strength and location recognition. We test these hypotheses using experimental data, which show that, indeed, some websites go unrecognized and that stronger borders increase users' recognition of having visited a website and users' credit attribution for their experience to the site. Our findings demonstrate the usefulness of the geography metaphor, suggest the need to further study dynamics regarding individual sites within the context of multi-site sessions and show the usefulness of erecting stronger borders to mark the entry into digital locations.

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10. Montealegre, R., Iyengar, K., & Sweeney, J. (2019). Understanding Ambidexterity: Managing Contradictory Tensions Between Exploration and Exploitation in the Evolution of Digital Infrastructure. *Journal of the Association for Information Systems*, *20*(5), 647–680. https://doi-org.scd-rproxy.u-strasbg.fr/10.17705/1jais.00547

*Prior research on the evolution of digital infrastructure has paid considerable attention to effective strategies for resolving contradictory tensions, yet what we still do not understand is the role of higher-level organizational capabilities that help balance the contradictory tensions that emerge during this evolution. In addressing this gap, two related questions guided our investigation: (1) How do organizations experience and resolve contradictory tensions throughout the evolution of digital infrastructure? and (2) What can we learn about the organizational capabilities that drive strategic actions in resolving these contradictory tensions? We approach these questions using an in-depth case study at RE/MAX LLC, a global real estate franchise. Based on our findings, we propose a theoretical model of **digital infrastructure ambidexterity.** The model recognizes three pairs of capabilities (identifying and germinating, expanding and legitimizing, and augmenting and implanting) and two supporting factors (leadership and structure) that are key to resolving contradictory tensions during this evolution. This study responds to a recent research call for dynamic process perspectives at multiple levels of analysis. We discuss the implications of this model for research and practice and offer observations for future research.*

11. Avgerou, C. (2019). Contextual Explanation: Alternative Approaches and Persistent Challenges. *MIS Quarterly*, *43*(3), 977-A18. https://doi-org.scd-rproxy.u-strasbg.fr/10.25300/MISQ/2019/13990

This paper identifies challenges facing the development of contextual theory in Information Systems research. The IS literature is examined to identify the variation of approaches through which IS research accounts for contextual influences in the formation of IS phenomena. The literature review reveals issues that require methodological and theoretical attention. These concern the generalization of context-specific research findings; the partiality of theory due to trade-offs of scale and detail; the development of sociomaterial perspectives of contextual influences on IS phenomena; and the challenge posed to contextual explanation from ontologies that give primacy to processes of continuous change over existing entities. From the exploration of these issues, comparative research is suggested as a promising approach to generalization; an argument is made for research framing with explicit consideration of scale of the context domain under inquiry to allow for the comparison and complementarity of research findings;

*alternative theoretical perspectives of context related with theories of technology and theories of action are identified; **and directions toward the development of a sociomaterial perspective of context are suggested**.*

12. Lin, X., Sarker, S., & Featherman, M. (2019). Users' Psychological Perceptions of Information Sharing in the Context of Social Media: A Comprehensive Model. *International Journal of Electronic Commerce*, *23*(4), 453–491. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/10864415.2019.1655210

Internet users have been actively using social media to share various kinds of information online, offering opportunities for companies to gain valuable data from their customers. Although researchers have paid considerable attention to users' information-sharing behavior, few studies have attempted to explore their psychological perceptions in decision-making about sharing information on social media. To gain further insights into users' information-sharing behavior, our work aims to develop a comprehensive model illustrating individuals' information-sharing behavior by integrating social-media-based technology features, social capital factors, and personal factors into the theory of reasoned action. Our research results strongly support the research model, which involves using an online survey to collect data. In particular, social media technology features (viz., interactivity and social presence), privacy, social capital (viz., commitment and social ties), and outcome expectations affect users' information-sharing behavior on social media directly and indirectly. Our work contributes to the information-sharing literature by advancing it in a social media context and exploring individuals' psychological perceptions. It also advances social capital theory by incorporating social media design features and providing further insights into how they can build individuals' social capital online. Practically, our work delivers insights for companies (including social media providers) regarding how to encourage users' information-sharing behaviors and demonstrate business values.

13. Tarafdar, M., Cooper, C. L., & Stich, J. (2019). The technostress trifecta - techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal*, *29*(1), 6–42. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/isj.12169

*Technostress—defined as stress that individuals experience due to their use of Information Systems—represents an emerging phenomenon of scholarly investigation. It examines how and why the use of IS causes individuals to experience various demands that they find stressful. **This paper develops a framework for guiding future research in technostress experienced by individuals in organizations.** We first review and critically analyse the state of current research on technostress reported in journals from the IS discipline and the non-IS disciplines that study stress in organizations (eg, organizational behaviour and psychological stress). We then develop our framework in the form of the "technostress trifecta"—techno-eustress, techno-distress, and Information Systems design principles for technostress. The paper challenges 3 key ideas imbued in the existing technostress literature. First, it develops the argument that, in contrast to negative outcomes, technostress can lead to positive outcomes such as greater effectiveness and innovation at work. Second, it suggests that instead of limiting the role of IS to that of being a stress creator in the technostress phenomenon, it should be expanded to that of enhancing the positive and mitigating the negative effects of technostress through appropriate design. Third, it lays the groundwork for guiding future research in technostress through an interdisciplinary framing that enriches both the IS and the psychological stress literatures through a potential discourse of disciplinary exchange.*

14. Etter, M., Ravasi, D., & Colleoni, E. (2019). Social Media and the Formation of Organizational Reputation. *Academy of Management Review*, *44*(1), 28–52. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/amr.2014.0280

The rise of social media is changing how evaluative judgments about organizations are produced and disseminated in the public domain. *In this article we discuss how these changes question traditional assumptions that research on media reputation rests upon, and we offer an alternative framework that begins to account for how the more active role of audiences, the changing ways in which*

they express their evaluations, and the increasing heterogeneity and dynamism that characterize media reputation influence the formation of organizational reputations.

15. Zadeh, A. H., Zolfagharian, M., & Hofacker, C. F. (2019). Customer–customer value co-creation in social media: conceptualization and antecedents. *Journal of Strategic Marketing*, *27*(4), 283–302. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/0965254X.2017.1344289

*Social media has vitalized the role of customer-to-customer (C2C) interactions in the value co-creation process. However, there is limited research investigating the dimensions of value co-creation as well as its psychological antecedents in online platforms. This research conceptualizes customer–customer value co-creation (CCVCC) and its dimensions (participation behavior and citizenship behavior) within the social media context, and employs the theory of planned behavior (TPB), past behavior, and the modifying role of tie strength to investigate the antecedents of CCVCC intention. Surveying 328 social media users, we find that the components of the TPB, including attitude, subjective norm, and perceived behavioral control, along with past CCVCC behavior, comprise key predictors of CCVCC intention. **However, the influence of these antecedents is stronger in networks of strong ties relative to those of weak ties.** Attitude emerged as the key mediator of the effect of past CCVCC behavior on CCVCC intention. Research and managerial implications are discussed and limitation exposed.*

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16. Chen, W., Wei, X., & Xiaoguo Zhu, K. (2018). Engaging Voluntary Contributions in Online Communities: A Hidden Markov Model. *MIS Quarterly*, *42*(1), 83-A8.

*User contribution is critical to online communities but also difficult to sustain given its public goods nature. This paper studies the design of IT artifacts to motivate voluntary contributions in online communities. We propose a dynamic approach, which allows the effect of motivating mechanisms to change across users over time. We characterize the dynamics of user contributions using a hidden Markov model (HMM) with latent motivation states under the public goods framework. **We focus on three motivating mechanisms on transitioning users between the latent states: reciprocity, peer recognition, and self-image.** Based on Bayesian estimation of the model with user-level panel data, we identify three motivation states (low, medium, and high),and show that the motivating mechanisms, implemented through various IT artifacts, could work differently across states. Specifically, reciprocity is only effective to transition users from low to medium motivation state,whereas peer recognition can boost all users to higher states. And self-image shows no effect when a user is already in high motivation state, although it helps users in low and medium states move to the high state. Design simulations on our structural model provide additional insights into the consequences of changing specific IT artifacts. These findings offer implications for platform designers on how to motivate user contributions and build sustainable online communities.*

17. Karahanna, E., Sean Xin Xu, Yan Xu, & Zhang, N. (Andy). (2018). The Needs–Affordances–Features Perspective for the Use of Social Media. *MIS Quarterly*, *42*(3), 737–756. https://doi-org.scd-rproxy.u-strasbg.fr/10.25300/MISQ/2018/11492

*The paper develops a needs–affordances–features (NAF) perspective on social media use which posits that individuals' psychological needs motivate their use of social media applications to the extent to which these applications provide affordances that satisfy these needs. Our theoretical development builds upon two psychological theories, namely self-determination and psychological ownership, to identify five psychological needs (needs for autonomy, relatedness, competence, having a place, and self-identity), that we posit are particularly pertinent to social media use. According to NAF, these psychological needs will motivate use of those social media applications that provide salient affordances to fulfill these needs. We identify such affordances through a comprehensive review of the literature and of social media applications and put forth propositions that map the affordances to the psychological needs that they fulfill. Our theory development generates important implications. **First, it has implications for social media research in that it provides an overarching comprehensive framework for the affordances of social media as a whole and the related psychological***

needs that motivate their use. Future studies can leverage NAF to identify psychological needs motivating the use of specific social media sites based on the affordances the sites provide, and design science research can leverage NAF in the design and bundling of specific social media features to engage users. Second, it has implications for technology acceptance research in that NAF can enrich existing models by opening up the mechanisms through which psychological needs influence user perceptions of social media and their use patterns and behaviors. Finally, NAF provides a new lens and common vocabulary for future studies, which we hope can stimulate cumulative research endeavors to develop a comprehensive framework of information systems affordances in general and the psychological needs that information systems satisfy.

18. Grimes, M. G. (2018). The Pivot: How Founders Respond to Feedback through Idea and Identity Work. *Academy of Management Journal*, *61*(5), 1692–1717. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/amj.2015.0823

*Efforts to incorporate external feedback are central to the process of entrepreneurship and to that of creative work more broadly, yet, because individuals may view aspects of their creative ideas as linked to their self-concepts, this can trigger resistance toward revision. Thus, feedback-induced change, while likely intended to increase the viability of creative ideas, might paradoxically undermine that viability by compromising creative workers' associated identity-based relationships with their creative endeavors. While existing scholarship has established the importance of creative revision, research has largely overlooked how this vital process intersects with creative workers' identities. Through a field study of 59 founders and their entrepreneurial ideas, **I present an identity-based process model of creative revision that highlights differences in founders' psychological ownership of their ideas and how those differences affect subsequent revision efforts.** The emerging findings contribute to existing theory by revealing that the capacity to extend the novelty and usefulness of one's ideas is not merely subject to informational constraints but also to identity-based constraints.*

19. Schia, N. N. (2018). The cyber frontier and digital pitfalls in the Global South. *Third World Quarterly*, *39*(5), 821–837. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/01436597.2017.1408403

*How does digitalisation lead to new kinds of global connections and disconnections in the ==Global South==? And what are the pitfalls that accompany this development? Much of the policy literature on digitalisation and development has focused on the importance of connecting developing countries to digital networks. **Good connection to digital networks may have a fundamental impact on societies, changing not only how individuals and businesses navigate, operate and seek opportunities, but also as regards relations between government and the citizenry.** However, the rapid pace of this development implies that digital technologies are being put to use before good, functional regulatory mechanisms have been developed and installed. The resultant shortcomings - in state mechanisms, institutions, coordination mechanisms, private mechanisms, general awareness, public knowledge and skills - open the door to new kinds of vulnerabilities. Herein lie dangers, but also opportunities for donor/recipient country exchange. Instead of adding to the already substantial literature on the potential dividends, this article examines a less studied issue: the new societal vulnerabilities emerging from digitalisation in developing countries. While there is wide agreement about the need to bridge the gap between the connected and the disconnected, the pitfalls are many.*

20. Ramaswamy, V., & Ozcan, K. (2018). Offerings as Digitalized Interactive Platforms: A Conceptual Framework and Implications. *Journal of Marketing*, *82*(4), 19–31. https://doi-org.scd-rproxy.u-strasbg.fr/10.1509/jm.15.0365

In an age of digitalized interactions, offerings are no longer "finished" in the traditional sense; creation of value continues by engaging actors (often ==consumers== and their associated social networks) interacting with organizing actors (often firms and their associated organizational ecosystem) in a joint space of interactive system-environments. One can think of the Apple Watch NikePlus (AWNP) offering in which the consumer co-creates valuable experienced outcomes with a mix of applications, touchpoints, and uses, while

AWNP and its organizing actors co-create environments with consumers. **Actors increasingly find themselves in such a joint enactment of interactional value creation, through offerings as evolving digitalized networked arrangements of artifacts, persons, processes, and interfaces,** *which the authors refer to as a Digitalized Interactive Platform (DIP). This implies a broader view of value creation—one in which value is created through interactions, versus one where value is simply the exchange of a fixed offering between a firm and its customers. Offerings as DIPs have significant implications for the theory and practice of* <mark>marketing</mark>*.*

21. Park, E., Rishika, R., Janakiraman, R., Houston, M. B., & Yoo, B. (2018). Social Dollars in Online Communities: The Effect of Product, User, and Network Characteristics. *Journal of Marketing*, *82*(1), 93–114. https://doi-org.scd-rproxy.u-strasbg.fr/10.1509/jm.16.0271

Online communities have experienced burgeoning popularity over the last decade and have become a key platform for users to share information and interests, and to engage in social interactions. Drawing on the social contagion literature, the authors examine the effect of online social connections on users' product purchases in an online community. They assess how product, user, and network characteristics influence the social contagion effect in users' spending behavior. The authors use a unique large-scale data set from a popular massively multiplayer online role-playing game community—consisting of users' detailed gaming activities, their social connections, and their in-game purchases of functional and hedonic products—to examine the impact of gamers' social networks on their purchase behavior. The analysis, based on a double-hurdle model that captures <mark>gamers' decisions of playing and spending levels,</mark> *reveals evidence of "social dollars," whereby social interaction between gamers in the community increases their in-game product purchases. Interestingly, the results indicate that social influence varies across different types of products. Specifically, the effect of a focal user's network ties on his or her spending on hedonic products is greater than the effect of network ties on the focal user's spending on functional products. Furthermore, the authors find that user experience negatively moderates social contagion for functional products, whereas it positively moderates contagion for hedonic products. In addition, dense networks enhance contagion over functional product purchases, whereas they mitigate the social influence effect over hedonic product purchases. The authors perform a series of tests and robustness checks to rule out the effect of confounding factors. They supplement their econometric analyses with dynamic matching techniques and estimate average treatment effects. The results of the study have implications for both theory and practice and help provide insights on* **how managers can monetize social networks and use social information to increase user engagement in online communities***.*

22. Hsieh, Y.-C., Weng, J., & Lin, T. (2018). How social enterprises manage their organizational identification: a theoretical framework of identity management approach through attraction, selection, and socialization. *International Journal of Human Resource Management*, *29*(20), 2880–2904. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/09585192.2017.1328610

Social enterprises, as a typical type of hybrid-identity organization, face identification tensions among members, arising from the divergent identities. Prior research has focused on how hybrid identities can be managed at the organizational level. However, the process through which identification emerges in hybrid-identity social enterprises remains relatively unexplored. This study addresses these gaps and aims to contribute to identity and identification theory. This research has taken a qualitative (case study) approach, with in-depth interviews and archival data from nine social enterprises in <mark>Taiwan</mark>*.* **Our findings reveal three different types of responses to hybrid identities of social enterprises: synthesis, integration, and deletion.** *It is observed that different hybrid identities management and organizational identification management practices will lead to members' identification and dis-identification. This research proposes an attraction-selection-socialization model, suggesting that, to foster identification, social enterprises need to manage their hybrid organizational identities and embed the new common identity into members' daily work through attraction, selection, and socialization processes.*

23. Jarvenpaa, S. L., & Standaert, W. (2018). Digital Probes as Opening Possibilities of Generativity.

Journal of the Association for Information Systems, *19*(10), 982–1000. https://doi-org.scd-rproxy.u-strasbg.fr/10.17705/1jais.00516

*The information systems research on generativity promises unprompted, innovative inputs from uncoordinated audiences, whose participation with heterogeneous technological resources generates diverse outputs and opens new possibilities. The question is how to perpetuate the openness on which the outputs of generativity rely. We advance, as a potential mechanism of generativity, the concept of digital probes, **which leverage human and technological resources in hybrid digital and physical environments**. The aesthetically rich probes challenge values, identities, and practices, cultivating emotional tensions that can reveal previously unexplored and unimagined possibilities, resulting in novel ideas, thoughts, and expressions. The new possibilities reveal what is hidden; reconfigure practices; cross-appropriate technological and social resources; and thereby further expand what can be experienced, viewed, and imagined. Further, the new possibilities draw new actors that again view things differently and seek different experiences, thus fueling emotional tensions that in turn open new possibilities, without settling them. We illustrate digital probes and their effects at Formula E. Formula E is a new motorsports venture that leveraged eSports, social media, crowdsourcing, and driverless cars in digital probes to reveal and examine previously unimagined possibilities of what the world of motorsport could be in the digital era. We end by exploring future research directions.*

24. Fang, Y.-H., Tang, K., Li, C.-Y., & Wu, C.-C. (2018). On electronic word-of-mouth diffusion in social networks: curiosity and influence. *International Journal of Advertising*, *37*(3), 360–384. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/02650487.2016.1256014

*The rapid proliferation of social networking sites (SNSs) provides marketers with ample opportunities to explore advertising strategies based on electronic word-of-mouth (eWOM). With that in mind, this study aims to understand the influence of the eWOM diffusion process on SNSs. We propose a theoretical framework to investigate the roles of curiosity and influence in SNS users' decisions to adopt eWOM and to pass it along to their contact groups. Two forms of curiosity, **specific and diversive, are proposed to initiate specific exploration** (consistency checking and knowledge-based validation) **and diversive exploration** (referral visit behavior), and eventually, adoption and pass-along behavior. In addition, SNS influence, formed by maven, persuasiveness, and connectivity, is proposed as a moderator affecting information diffusion. The proposed framework is empirically validated using the data collected from online surveys of 590 Facebook users. Implications for theory and practice are also discussed.*

25. Reid, E., & Duffy, K. (2018). A netnographic sensibility: developing the netnographic/social listening boundaries. *Journal of Marketing Management*, *34*(3/4), 263–286. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/0267257X.2018.1450282

*Netnography is constantly evolving as technologies and access to online data develop. Our paper outlines how large data sets of social media can be analysed through bridging the divide between the small, rich and contextually nuanced data that is the hallmark of netnography and the scope and scale of data made possible through social media listening conventions. We define this approach as netnographic sensibility and with the use of a short case study discuss **the process through which social media data could be gathered, triangulated and analysed.** We orientate the paper around two interrelated questions: investigating how netnographic insights can be extended using social media monitoring tools, and asking how this can be used to add richness and depth to understanding mass consumer realities. Our contribution complements the widely established methodological approach of netnography as we argue that netnography has the capacity and capability to embrace technological advances within the domain of social listening to add value for academic researchers.*

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26. Austin, C. G., & Kwapisz, A. (2017). The Road to Unintended Consequences Is Paved with Motivational Apps. *Journal of Consumer Affairs*, *51*(2), 463–477.

*Myriad automated interventions have been designed to help consumers set and achieve behavioral goals. Firms and governments are making significant investments in applications that help consumers manage their behavior. However, scant evidence demonstrates their effectiveness. Are such interventions effective? Are they worth our time and money? Might they do more harm than good? This study presents the results of an exploratory experiment using Self Determination Theory to test the efficacy of one type of motivational aid used in many apps-the automated prompt. **We examine how effective this approach is at helping people make long-term behavioral changes.** We also test whether providing people with motivational wisdom-i.e., 'it takes three weeks to form a habit'-has an effect on behavioral change. In addition to practical implications for consumers' health, productivity, and happiness, and policy implications, our project contributes to the literature on consumers' motivation and goal pursuit.*

27. Xiaojun, Z. (2017). Knowledge Management System Use and Job Performance: A Multilevel Contingency Model. *MIS Quarterly*, *41*(3), 811-A5.

*This paper seeks to develop a better understanding of job performance in the context of a knowledge management system (KMS) implementation. This work adopts the context theorizing approach that informs the conceptualization of KMS use and identification of contingency factors. Specifically, the literature on rich system use is adapted to develop the construct in the context of a KMS. The literature related to task, system, user, and leadership is also drawn upon to identify four contingency factors—task nonroutineness, perceived support for contextualization, absorptive capacity, and transformational leadership—that affect the KMS use and job performance relationship. **The paper argues that rich use of a KMS positively affects job performance and the four contingency factors moderate this relationship.** A mixed methods approach that includes a quantitative study (n = 1,441) among knowledge workers in seven business units of a large organization in the finance industry was used to validate the theoretical model. A follow-up qualitative study (n = 48) was conducted in one business unit to cross-validate the findings and explain unsupported findings. Data were collected from multiple sources (i.e., surveys, interviews, and system archives). The results largely supported the model. Theoretical and practical implications of the results are discussed.*

28. Bala, H., Massey, A. P., & Montoya, M. M. (2017). The Effects of Process Orientations on Collaboration Technology Use and Outcomes in Product Development. *Journal of Management Information Systems*, *34*(2), 520–559. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/07421222.2017.1334494

*Notwithstanding interest in implementing information technologies (ITs) that facilitate collaboration among employees, there has been limited research that examines how such technologies influence collaboration in strategic business processes, such as new product development (NPD), and how this influence is contingent on the nature of the process. We develop and test a model that posits that employees' collaboration technology use in NPD will influence collaboration outcomes, such as IT-enabled collaboration capability and collaboration satisfaction. The model postulates that NPD involves multiple process orientations—exploration, exploitation, and ambidexterity—and that these orientations have a moderating effect on the relationship between collaboration technology use and outcomes. We conducted two studies in a major pharmaceutical company (N= 1,749 and 1,454, respectively) and found support for our model. We found that the effects of collaboration technology use on outcomes were stronger for employees involved in the NPD process phase that had an ambidexterity orientation. Our findings contribute to theory and practice related to the use of collaboration technology in the NPD process **by offering insights on how process orientations influence the dynamics of the relationship between employees' use of collaboration technologies and associated outcomes.***

29. BELLEZZA, S., PAHARIA, N., & KEINAN, A. (2017). Conspicuous Consumption of Time: When Busyness and Lack of Leisure Time Become a Status Symbol. *Journal of Consumer Research*, *44*(1),

118–138. https://doi-org.scd-rproxy.u-strasbg.fr/10.1093/jcr/ucw076

While research on conspicuous consumption has typically analyzed how people spend money on products that signal status, this article investigates conspicuous consumption in relation to time. The authors argue that a busy and overworked lifestyle, rather than a leisurely lifestyle, has become an aspirational status symbol. A series of studies shows that the positive inferences of status in response to busyness and lack of leisure time are driven by the perceptions that a busy person possesses desired human capital characteristics (e.g., competence and ambition) and is scarce and in demand in the job market. **This research uncovers an alternative kind of conspicuous consumption that operates by shifting the focus from the preciousness and scarcity of goods to the preciousness and scarcity of individuals.** *Furthermore, the authors examine cultural values (perceived social mobility) and differences among cultures (North America vs. Europe) to demonstrate moderators and boundary conditions of the positive associations derived from signals of busyness.*

30. Nelson, M. R., Ham, C.-D., & Ahn, R. (2017). Knowledge Flows Between Advertising and Other Disciplines: A Social Exchange Perspective. *Journal of Advertising*, *46*(2), 309–332. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/00913367.2016.1277379

Knowledge flows between advertising and other academic disciplines are examined to identify the structure of scientific knowledge, the extent of social exchange and the scientific status of the field. Bibliometric analysis is used to identify who is citing our research and who we cited. Cocitation patterns for the leading advertising journals (Journal of Advertising[JA],Journal of Advertising Research[JAR],International Journal of Advertising[IJA], Journal of Interactive Advertising[JIA], and Journal of Current Issues and Research in Advertising[JCIRA]) and the top 50 citing and cited journals with citation relationships from 2005 to 2014 were examined. Findings revealed that advertising is citing advertising scholarship the most, followed by marketing, consumer research, psychology, and communication. This suggests a "maturing field" where scholars look within the discipline's body of knowledge. In turn, advertising research is cited by advertising, marketing, business (general), communication, and psychology. The overall citing-to-cited ratio suggests that **advertising is more a "receiver" than "provider" of knowledge to other disciplines;** *however, there is variation across the advertising journals. The positioning of advertising journals in the larger disciplinary framework shows close relationships to consumer research and interactive communication. The most common focus among the top-cited articles is digital media, with few articles focusing on traditional advertising. The implications of our findings for the field of advertising are discussed.*

31. WU LIU, ZHAOLI SONG, XIAN LI, & ZHENYU LIAO. (2017). Why and When Leaders' Affective States Influence Employee Upward Voice. *Academy of Management Journal*, *60*(1), 238–263. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/amj.2013.1082

Although researchers have argued that employees often carefully examine social contexts before speaking up to leaders, the role of leaders' affective states has received little attention. The current research addresses this important issue from an emotion-as-social-information perspective by exploring whether, why, and when leaders' affect influences employees' voice behavior. By collecting data of 640 daily interactions from both sides of 85 leader-employee dyads using the experience sampling method through mobile surveys, we found that leaders' positive affect was positively related to employees' voice behavior. Furthermore, such a relationship could be accounted for through employees' psychological safety directly via the emotional contagion mechanism (through employees' own positive affect) but not directly via the signaling mechanism (through employees' assessment of leaders' positive affect); and the effects of both employees' own positive affect and their assessments of leaders' positive affect on psychological safety were stronger when the leader-member exchange relationship was weak. Interestingly, we also found that leaders' negative affect was positively related to employees' voice, but neither emotional contagion nor signaling mechanisms explained this effect. **These findings highlight the important role of leaders' affect in the voice process** *and also provide insights for when employees would choose to speak up to their leaders.*

32. Donate, M. J., Peña, I., & Sánchez de Pablo, J. D. (2016). HRM practices for human and social capital development: effects on innovation capabilities. *International Journal of Human Resource Management*, *27*(9), 928–953. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/09585192.2015.1047393

*This paper analyzes the effect of systems of human resource management (HRM) practices on a company's innovation capabilities. To date, few studies have analyzed the way a firm may be more innovative by using specific sets of high-performance HRM practices from an intellectual capital-based view of the firm. From an extensive literature review, a model was established and tested through structural equation modelling, using the statistical technique of partial least squares. The study was applied to a sample of technological firms in Spain and the results show that high-profile personal HRM practices positively influence human capital while collaborative HRM practices influence social capital, which, in turn, affect innovation capabilities by means of, respectively, total and partial mediating effects. Managerial and HRM implications of these results are drawn by the authors, highlighting **the idea of paying increased attention to managing firms with a focus on strategic intangible assets in order to gain competitive advantages based on innovation.***

33. Dechamp, G., & Szostak, B. (2016). Organisational creativity and the creative territory: The nature of influence and strategic challenges for organisations. *M@n@gement*, *19*(2), 61–88.

*This research considers the nature of the influence of the creative territory, examined from the perspective of three levels (the underground, middleground and upperground), on the endogenous factors of organisational creativity (individual commitment, organisational context and the organisation's ability to renew itself). The qualitative analysis of 18 SMEs involved in a competition for ideas highlights the fact that each level of the creative territory tends to have a different (either positive or negative) influence on the endogenous factors of organisational creativity. In order to understand these differences, this research identifies, among other things, four specific properties of the creative territory: the production of discourse, the creation of opportunities to transform the idea into a project, the roll-out of the project, and the protection of the idea and the project. **The discussion takes a look at organisations' openness to their environment and the role of the individual and intellectual property in this openness.** This work ultimately validates the value of integrating the creative territory into models of organisational creativity.*

34. Lyytinen, K., Yoo, Y., & Boland Jr., R. J. (2016). Digital product innovation within four classes of innovation networks. *Information Systems Journal*, *26*(1), 47–75. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/isj.12093

*The increased digitization of organizational processes and products poses new challenges for understanding product innovation. It also opens new horizons for information systems research. We analyse how ongoing pervasive digitization of product innovation reshapes knowledge creation and sharing in innovation networks. We argue that advances in digital technologies (1) increase innovation network connectivity by reducing communication costs and increasing its reach and scope and (2) increase the speed and scope of digital convergence, which increases network knowledge heterogeneity and need for integration. These developments, in turn, stretch existing innovation networks by redistributing control and increasing the demand for knowledge coordination across time and space presenting novel challenges for knowledge creation, assimilation and integration. Based on this foundation, **we distinguish four types of emerging innovation networks supported by digitalization: (1) project innovation networks; (2) clan innovation networks; (3) federated innovation networks; and (4) anarchic innovation networks.** Each network involves different cognitive and social translations - or ways of identifying, sharing and assimilating knowledge. We describe the role of five novel properties of digital infrastructures in supporting each type of innovation network: representational flexibility, semantic coherence, temporal and spatial traceability, knowledge brokering and linguistic calibration. We identify several implications for future innovation research. In*

particular, we focus on the emergence of anarchic network forms that follow full-fledged digital convergence founded on richer innovation ontologies and epistemologies calling to critically re-examine the nature and impact of modularization for innovation.

35. Turel, O., & Qahri-Saremi, H. (2016). Problematic Use of Social Networking Sites: Antecedents and Consequence from a Dual-System Theory Perspective. *Journal of Management Information Systems*, *33*(4), 1087–1116. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/07421222.2016.1267529

*Problematic use of social networking sites (SNS) and its adverse consequences have become prevalent, yet little is known about the conceptualization and etiology of problematic use of SNS. This study draws on dual-system theory (DST), borrowed from cognitive neuroscience (also known as reflective-impulsive theory of the mind and fast and slow thinking) to investigate what drives this phenomenon. The statistical analyses of time-lagged data collected from 341 Facebook users implicate an imbalance between two systems in the human mind, involving strong cognitive-emotional preoccupation with using the SNS (System 1, impulsive) and weak cognitive-behavioral control over using the SNS (System 2, reflective), as the driver of problematic SNS use behaviors. Problematic use of SNS, in turn, diminishes users' academic performance. This study contributes to research on the dark side of information systems (IS) use by conceptualizing problematic use and explaining its drivers and consequences. It demonstrates that the dual-system theory is an appropriate theoretical perspective for explaining problematic IS use, superior to planned-behavior–based models. **It also explains some of the precursors of the dual system factors and offers practical implications to information technology artifact designers and users.**

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36. BUTTS, M. M., BECKER, W. J., & BOSWELL, W. R. (2015). Hot Buttons and Time Sinks: The Effects of Electronic Communication during Nonwork Time on Emotions and Work-Nonwork Conflict. *Academy of Management Journal*, *58*(3), 763–788. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/amj.2014.0170

*As advances in communication technologies have made organizations more easily connected to their workforce outside of normal work hours, there is increased concern that employees may experience heightened work-nonwork conflict when away from the office. The current study investigates the effects of electronic communication received during nonwork time using an experience sampling methodology to examine within-person relationships among elements of electronic communication (affective tone, time required), emotional responses (anger, happiness), and work-to-nonwork conflict in a sample of 341 working adults surveyed over a seven-day period. Hierarchical linear modeling results suggested that both affective tone and time required were associated with anger, but only affective tone was associated with happiness. Further, anger was associated with work-to-nonwork conflict and mediated the effects of affective tone and time required on work-to-nonwork conflict. **Results also revealed cross-level moderating effects of abusive supervision and communication sender together**, as well as segmentation preference. Implications of these findings for future theorizing and research on electronic communication during nonwork time are discussed.*

37. Schweitzer, F., Rau, C., Gassmann, O., & Hende, E. (2015). Technologically Reflective Individuals as Enablers of Social Innovation. *Journal of Product Innovation Management*, *32*(6), 847–860. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/jpim.12269

This paper identifies technologically reflective individuals and demonstrates their ability to develop innovations that benefit society. Technological reflectiveness (TR) is the tendency to think about the societal impact of an innovation, and those who display this capability in public are individuals who participate in online idea competitions focused on technical solutions for social problems (such as General Electric's eco-challenge, the James Dyson Award, and the BOSCH Technology Horizon Award). However, technologically reflective individuals also reflect in private settings (e.g., when reading news updates), thus requiring a scale to identify them. This

paper describes the systematic development of an easy-to-administer multi-item scale to measure an individual's level of TR. Applying the TR scale in an empirical study on a health monitoring system confirmed that individuals' degree of TR relates positively to their ability to generate (1) more new product features and uses, (2) features with higher levels of societal impact, and (3) features that are more elaborated. **This scale allows firms seeking to implement co-creation in their new product development (NPD) process and sustainable solutions to identify such individuals.** *Thus, this paper indicates that companies wishing to introduce new technological products with a positive societal impact may profit from involving technologically reflective individuals in the NPD process.*

38. Carter, M. (2015). Me, My Self, and I(T): Conceptualizing Information Technology Identity and Its Implications. *MIS Quarterly*, *39*(4), 931–957.

As social roles and relationships become increasingly inseparable from people's interactions with information technologies (ITs), new constructs representing this intertwinement are needed to expand understandings of human behavior. As part of that endeavor, this paper draws on structural symbolic interactionist identity theories to systematically develop a conceptual definition of one such construct, IT identity—defined as the extent to which an individual views use of an IT as integral to his or her sense of self—as a new form of identity. The construct is framed within a theoretical model. Our goal is to facilitate the establishment of IT identity as an important and relevant construct that can improve our understanding of a variety of phenomena. In doing so, this paper makes three contributions to the information systems (IS) literature. **First, it delineates current understanding of IT as a medium, determinant, or consequent of identity.** *Second, it defines the conceptual domain and theme of IT identity, which is necessary for investigating the construct's theoretical influence. Third, it demonstrates the utility of IT identity to a wide range of IS topics relating to how people express, maintain, and expand their self-concepts. In doing so, it offers potential directions and opportunities for IS researchers to incorporate this novel concept into IS research.*

39. Srivastava, S. C., Chandra, S., & Shirish, A. (2015). Technostress creators and job outcomes: theorising the moderating influence of personality traits. *Information Systems Journal*, *25*(4), 355–401. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/isj.12067

Although prior research has examined the influence of technostress creators on job outcomes, insights into the influence of personality traits on the perceptions of technostress creators and their consequent impacts on job outcomes are rather limited. Such insights would enable a deeper understanding about the effects of individual differences on salient job-related outcomes. In this research, by leveraging the distinctions in personality traits offered by the big five personality traits in the five-factor model and grounding the research in the transactional model of stress and coping, **we theorise the moderating influence of personality traits on the relationships between technostress creators and job outcomes,** *namely job burnout and job engagement. Specifically, the study theorises the mechanisms through which each of the specific personality traits openness-to-experience, neuroticism, agreeableness, conscientiousness and extraversion interacts with technostress creators to differently influence job burnout and job engagement. We test the proposed model in a field study based on a survey of senior organisational managers who regularly use information and communication technologies for executing professional tasks. Although technostress creators are generally associated with negative job outcomes, our results also show that for individuals with certain personality traits, technostress creators may result in positive job outcomes. The study thus contributes to the technostress literature, specifically by incorporating the salient role of individual differences. The study also provides insights for managers who should pay special attention to allocating specific job roles to employees with particular personality traits in order to optimise job-related outcomes.*

40. Qiu, L., Tang, Q., & Whinston, A. B. (2015). Two Formulas for Success in Social Media: Learning and Network Effects. *Journal of Management Information Systems*, *32*(4), 78–108. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/07421222.2015.1138368

Recent years have witnessed an unprecedented explosion in information technology that enables dynamic diffusion of user-generated

content in social networks. Online videos, in particular, have changed the landscape of marketing and entertainment, competing with premium content and spurring business innovations. In the present study, we examine how learning and network effects drive the diffusion of online videos. While learning happens through informational externalities, network effects are direct payoff externalities. Using a unique data set from **YouTube**, we empirically identify learning and network effects separately, and find that both mechanisms have statistically and economically significant effects on video views; furthermore, the mechanism that dominates depends on the video type. Specifically, although learning primarily drives the popularity of quality-oriented content, network effects also make it possible for attention-grabbing content to go viral. Theoretically, we show that, unlike the diffusion of movies, it is the combination of both learning and network effects that generate the multiplier effect for the diffusion of online videos. From a managerial perspective, providers can adopt different strategies to promote their videos accordingly, that is, signaling the quality or featuring the viewer base depending on the video type. **Our results also suggest that YouTube can play a much greater role in encouraging the creation of original content by leveraging the multiplier effect.**

41. Chen, R. R., & Kannan, N. R. P. (2015). Formal integration archetypes in ambidextrous organizations. *R&D Management*, *45*(3), 267–286. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/radm.12083

Research suggests that organizational ambidexterity, an organization's capacity to pursue both exploratory and exploitative activities, is critical to firm innovation and performance. Extant research primarily emphasizes several firm-level informal integration mechanisms, such as creating a common vision and relying on social integration, for integrating structurally ambidextrous units. Research has largely ignored, however, the formal mechanisms by which organizations have integrated such units. In this inductive study, using archival and interview data from organizations in Silicon Valley, we address this gap by identifying the formal integration archetypes that enable core business units to collaborate with new venture units to incubate new businesses. The four integration archetypes that enable collaboration vary along two key dimensions: who initiates new ventures and when collaboration is solicited. **We identify formal administrative and resource mechanisms that enable such collaboration.** We combine the disparate literatures of temporal and spatial separation of ambidextrous structures, and demonstrate how these must be combined at the business unit and new venture levels of analysis to achieve integration. The practical contribution of this study lies in identifying suitable contexts in which each of these archetypes can be utilized by practitioners for reintegrating new venture projects developed in separate structures.

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42. Cheng, C. C. J., & Huizingh, E. K. R. E. (2014). When Is Open Innovation Beneficial? The Role of Strategic Orientation. *Journal of Product Innovation Management*, *31*(6), 1235–1253. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/jpim.12148

Various scholars have accomplished a great deal to better understand open innovation effectiveness. Case studies have detailed its performance effects, while other studies showed the effectiveness of an aspect of open innovation, such as collaboration with third parties, external technology commercialization, and cocreation. Though most studies report a positive relation between open innovation and innovation performance, some studies indicate possible negative effects. **This has resulted in a call for research on what kind of organizational context suits open innovation best.** This study therefore addresses two questions: (1) does performing open innovation activities lead to increased innovation performance, and to which aspects of innovation performance is open innovation most strongly related? (2) what is the moderating impact of various kinds of strategic orientation on the relation between open innovation and innovation performance? In this study, we investigate three types of strategic orientations: entrepreneurial orientation, market orientation, and resource orientation. In a survey among 223 Asian service firms, we first develop and test a comprehensive measurement scale for open innovation that captures the entire range of open innovation activities, including

outside-in activities, inside-out activities, and coupled activities. The final scale comprises of 10 items and indicates to what extent a firm has implemented open innovation activities. Next, we study the relation between open innovation and innovation performance. The results indicate that performing open innovation activities is significantly and positively related to all four dimensions of innovation performance: new product/service innovativeness, new product/service success, customer performance, and financial performance. The impact of open innovation is not limited to a particular aspect of innovation performance; it positively affects a broad range of innovation performance indicators. Though open innovation is positively related to all four dimensions of innovation performance, the effect sizes are not equal. The impact on new service innovativeness and financial performance is relatively stronger. Regarding the influence of a firm's strategic orientation, we find that all significant moderation effects are positive. This suggests that, in general, having a more explicit strategic orientation enhances the effectiveness of open innovation. When comparing the three strategic orientations, entrepreneurial orientation strengthens the positive performance effects of open innovation significantly more than market orientation and resource orientation do. In turn, market orientation has a significantly stronger moderation effect than resource orientation. These findings provide empirical evidence of the context dependency of open innovation. Especially an entrepreneurial orientation, which is associated with proactive and entrepreneurial processes, seems to create a fertile setting for open innovation.

43. Scott, S. V., & Orlikowski, W. J. (2014). Entanglements in Practice: Performing Anonymity through Social Media. *MIS Quarterly*, *38*(3), 873–893.

*Information systems researchers have shown an increasing interest in the notion of **sociomateriality**. In this paper, we continue this exploration by focusing specifically on entanglement: the inseparability of meaning and matter. Our particular approach is differentiated by its grounding in a relational and performative ontology, and its use of agential realism. We explore some of the key ideas of entanglement through a comparison of two phenomena in the travel sector: an institutionalized accreditation scheme offered by the AA and an online social media website hosted by TripAdvisor. Our analysis centers on the production of anonymity in these two practices of hotel evaluation. By examining how anonymity is constituted through an entanglement of matter and meaning, we challenge the predominantly social treatments of anonymity to date and draw attention to the uncertainties and outcomes generated by specific performances of anonymity in practice. In closing, we consider what the particular agential realist concept of entanglement entails for understanding anonymity, and discuss its implications for research practice.*

44. Burtch, G., Ghose, A., & Wattal, S. (2014). Cultural Differences and Geography as Determinants of Online Prosocial Lending. *MIS Quarterly*, *38*(3), 773–794.

*In this paper, we analyze patterns of transaction between individuals using data drawn from Kiva.org, a global online crowdfunding platform that facilitates prosocial, peer-to-peer lending. Our analysis, which employs an aggregate dataset of country-to-country lending volumes based on more than three million individual lending transactions that took place between 2005 and 2010, considers the dual roles of geographic distance and cultural differences on lenders' decisions about which borrowers to support. While cultural differences have seen extensive study in the Information Systems literature as sources of friction in extended interactions, here, we argue and demonstrate their role in individuals' selection of a transaction partner. We present evidence that lenders do prefer culturally similar and geographically proximate borrowers. An analysis of the marginal effects indicates that an increase of one standard deviation in the cultural differences between lender and borrower countries is associated with 30 fewer lending actions, while an increase of one standard deviation in physical distance is associated with 0.23 fewer lending actions. We also identify a substitution effect between cultural differences and physical distance, such that a 50 percent increase in physical distance is associated with an approximate 30 percent decline in the effect of cultural differences. Considering approaches to overcoming the observed cultural effect, we offer some empirical evidence of the potential of **IT-based trust mechanisms**, focusing on Kiva's reputation rating system for microfinance intermediaries. We discuss the implications of our findings for prosocial lending, online crowdfunding, and electronic markets more broadly.*

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45. Ping Zhang. (2013). The Affective Response Model: A Theoretical Framework of Affective Concepts and Their Relationships in the Ict Context. *MIS Quarterly*, *37*(1), 247–274.

Affect is a critical factor in human decisions and behaviors within many social contexts. In the information and communication technology (ICT) context, a growing number of studies consider the affective dimension of human interaction with ICTs. However, few of these studies take systematic approaches, resulting in inconsistent conclusions and contradictory advice for researchers and practitioners. Many of these issues stem from ambiguous conceptualizations of various affective concepts and their relationships. Before researchers can address questions such as "what causes affective responses in an ICT context" and "what impacts do affective responses have on human interaction with ICTs," a theoretical foundation for affective concepts and their relationships has to be established. This theory and review paper addresses three research questions: (1) What are pertinent affective concepts in the ICT context? (2) In what ways are these affective concepts similar to, or different from each other? (3) How do these affective concepts relate to or influence one another? Based on theoretical reasoning and empirical evidence, the affective response model (ARM) is developed. ARM is a theoretically bound conceptual framework that provides a systematic and holistic reference map for any ICT study that considers affect. It includes a taxonomy that classifies affective concepts along five dimensions: the residing, the temporal, the particular/general stimulus, the object/behavior stimulus, and the process/outcome dimensions. ARM also provides a nomological network to indicate the causal or co-occurring relationships among the various types of affective concepts in an ICT interaction episode. ARM has the power for explaining and predicting, as well as prescribing, potential future research directions.

46. Davison, R. M., Ou, C. X. J., & Martinsons, M. G. (2013). Information technology to support informal knowledge sharing. *Information Systems Journal*, *23*(1), 89–109. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/j.1365-2575.2012.00400.x

The knowledge management (KM) literature largely focuses on the explicit and formal representation of knowledge in computer-based KM systems. Informal KM practices are widespread, but less is known about them. **This paper aims to redress this imbalance by exploring the use of interactive information technology (IT) applications for informal knowledge sharing (KS).** *We develop theoretical propositions to highlight the key facets of informal KS processes, and illustrate them through an interpretive case-study analysis of KS in two public relations firms in China. We then discuss the implications of our findings for practice in both China and beyond. Finally, we recommend a research agenda to further investigate informal, relationship-based knowledge sharing.*

47. Faulkner, P., & Runde, J. (2013). Technological Objects, Social Positions, and the Transformational Model of Social Activity. *MIS Quarterly*, *37*(3), 803–818.

The transformational model of social activity (TMSA), in many ways the centerpiece of critical realism, has been widely used in areas of information systems research. However, little has been done so far to develop a systematic theory of the nature, position, and identity of technological objects within the context of the TMSA. Our aim in this paper is to fill this gap, **paying particular attention to the important category of nonmaterial technological objects that lie at the heart of modern information systems.**

48. Huang, R., Kim, H., & Kim, J. (2013). Social capital in QQ China: Impacts on virtual engagement of information seeking, interaction sharing, knowledge creating, and purchasing intention. *Journal of Marketing Management*, *29*(3–4), 292–316. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/0267257X.2013.766630

Grounded in 485 million active user accounts of instant messaging (IM), QQ China features online channels which serve to generate social capital resources and accordingly encourage digital consumers' engagement. Given the embedded economic potential from QQ's popularity, this study aims to (1) to identify the dimensionality of virtual engagements, and (2) to investigate the impacts of social capital identification on the virtual engagement dimensions (i.e. information seeking, interaction sharing and knowledge creating, and

purchasing intention). Results from an analysis of data (n = 216) from China reveal significant impacts of social capital identification on all virtual engagements, while they do not indicate a relationship from knowledge creating to purchasing intention. However, social capital identification directly leads to purchasing intention, which implies the economic potential of QQ's businesses model. Understanding digital consumers' use of QQ offers a perspective on how companies can use Chinese social media to create meaningful value through an understanding of the Chinese consumer's cultural exclusivity.

49. Dobson, P., Jackson, P., & Gengatharen, D. (2013). Explaining Broadband Adoption in Rural Australia: Modes of Reflexivity and the Morphogenetic Approach. *MIS Quarterly*, *37*(3), 965–991.

*Universal fast broadband is currently being implemented by the Australian government. It is the largest single project in <mark>Australia's</mark> history. Represented as a nation-building exercise by the government and many public and private promoters, it is vilified by others as a massive waste of taxpayers' money. Ultimately the target of successful universal availability will require that metropolitan installations subsidize rural adoption. The take-up of these facilities, particularly in regional and remote areas, constitutes a complex, multi-factorial scenario in which political, personal, and organizational decisions are shaped by physical, cultural, economic, and ideological elements. Critical realism is proposed here as an aid for examining the complex reality of rural adoption for communities and small businesses in the regions. **This article highlights the importance of considering individual reflexivity in explaining the adoption decision and potential adoption barriers.***

50. Haenlein, M., & Libai, B. (2013). Targeting Revenue Leaders for a New Product. *Journal of Marketing*, *77*(3), 65–80. https://doi-org.scd-rproxy.u-strasbg.fr/10.1509/jm.11.0428

*Historically, **when targeting potential adopters of a new product**, firms have tended to focus first on people with disproportional effect on others, often labeled "opinion leaders." The authors highlight the benefit of <mark>targeting customers</mark> with high lifetime value (CLV), or "revenue leaders." The authors argue that targeting revenue leaders can create high value both by accelerating adoption among these customers and because of the higher-than- average value that revenue leaders generate by affecting other customers with similarly high CLV. The latter phenomenon is driven by network assortativity, whereby people's social networks tend to be composed of others who are similar to themselves. Analyzing an agent-based model of a seeding program for a new product, the authors contrast revenue leader seeding with opinion leader seeding and compare the factors that influence the effectiveness of each. They show that the distribution of CLV in the population and the seed size play a major role in determining which seeding approach is preferable, and they discuss the managerial implications of these findings.*

51. Becker, J.-M., Rai, A., Ringle, C. M., & Völckner, F. (2013). Discovering Unobserved Heterogeneity in Structural Equation Models to Avert Validity Threats. *MIS Quarterly*, *37*(3), 665-A21.

*A large proportion of information systems research is concerned with developing and testing models pertaining to complex cognition, behaviors, and outcomes of individuals, teams, organizations, and other social systems that are involved in the development, implementation, and utilization of information technology. Given the complexity of these social and behavioral phenomena, heterogeneity is likely to exist in the samples used in IS studies. While researchers now routinely address observed heterogeneity by introducing moderators, a priori groupings, and contextual factors in their research models, they have not examined <mark>how unobserved heterogeneity may affect their findings</mark>. **We describe why unobserved heterogeneity threatens different types of validity and use simulations to demonstrate that unobserved heterogeneity biases parameter estimates, thereby leading to Type I and Type II errors.** We also review different methods that can be used to uncover unobserved heterogeneity in structural equation models. While methods to uncover unobserved heterogeneity in covariance-based structural equation models (CB-SEM) are relatively advanced, the methods for partial least squares (PLS) path models are limited and have relied on an extension of mixture regression-finite mixture partial least squares (FIMIX-PLS) and distance measure-based methods-that have mismatches with some characteristics of PLS path modeling. We propose a new method-prediction-oriented segmentation (PLSPOS)- to overcome the limitations of FIMIX-PLS and other*

distance measure-based methods and conduct extensive simulations to evaluate the ability of PLS-POS and FIMIX-PLS to discover unobserved heterogeneity in both structural and measurement models. Our results show that both PLS-POS and FIMIX-PLS perform well in discovering unobserved heterogeneity in structural paths when the measures are reflective and that PLS-POS also performs well in discovering unobserved heterogeneity in formative measures. We propose an unobserved heterogeneity discovery (UHD) process that researchers can apply to (1) avert validity threats by uncovering unobserved heterogeneity and (2) elaborate on theory by turning unobserved heterogeneity into observed heterogeneity, thereby expanding theory through the integration of new moderator or contextual variables.

52. CRANE, A. (2013). Modern Slavery as a Management Practice: Exploring the Conditions and Capabilities for Human Exploitation. *Academy of Management Review*, *38*(1), 49–69. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/amr.2011.0145

Scant attention has been paid to the phenomenon of modern slavery in the management literature. This article redresses this by identifying modern slavery as a management practice comprising exploiting/insulating capabilities and sustaining/ shaping capabilities. I present a model specifying how these microorganization-level capabilities enable enterprises that deploy slavery to take advantage of the macro-institutional conditions that permit the practice to flourish in the face of widespread illegality and illegitimacy. I then advance potential implications for management theory and suggestions for further theoretical and empirical research.

53. Petter, S., DeLone, W., & McLean, E. R. (2013). Information Systems Success: The Quest for the Independent Variables. *Journal of Management Information Systems*, *29*(4), 7–62. https://doi-org.scd-rproxy.u-strasbg.fr/10.2753/MIS0742-1222290401

In 1992, DeLone and McLean suggested that the dependent variable for information systems (IS) research is IS Success. Their research resulted in the widely cited DeLone and McLean (D&M) IS Success Model, in which System Quality, Information Quality, Use, User Satisfaction, Individual Impact, and Organizational Impact are distinct, but related dimensions of IS success. Since the original IS Success Model was published, research has developed a better understanding of IS success. Meanwhile, comprehensive and integrative research on the variables that influence IS success has been lacking. Therefore, we examine the literature on the independent variables that affect IS success. After examining over 600 articles, we focused our attention on integrating the findings of over 140 studies. In this research, we identify 43 specific variables posited to influence the different dimensions of IS success, and we organize these success factors into five categories based on the Leavitt Diamond of Organizational Change: task characteristics, user characteristics, social characteristics, project characteristics, and organizational characteristics. **Next, we identify 15 success factors that have consistently been found to influence IS success: Enjoyment, Trust, User Expectations, Extrinsic Motivation, IT Infrastructure, Task Compatibility, Task Difficulty, Attitudes Toward Technology, Organizational Role, User Involvement, Relationship with Developers, Domain Expert Knowledge, Management Support, Management Processes, and Organizational Competence.** Finally, we highlight gaps in our knowledge of success factors and propose a road map for future research.

54. EISENMAN, M. (2013). Understanding Aesthetic Innovation in the Context of Technological Evolution. *Academy of Management Review*, *38*(3), 332–351. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/amr.2011.0262

I theorize the coevolution of technology and design by integrating research on the evolution of technology with ideas from sociology, marketing, and psychology that explain the effects of design. Specifically, I apply work arguing that visible design attributes, such as color, shape, or texture, allow producers to explain what their products do and how best to use them, to excite users in a way that generates sales, and to extend the basic functionalities of their products by highlighting their symbolic meanings. I then theorize that the relevance of these three uses varies in the context of technological evolution such that **affecting products' design-related attributes is a more central organizational process as product technologies emerge** and when they are very mature, suggesting a

U-shaped relationship between technological evolution and design. I also elaborate the moderators of this relationship: the frequency of successive product introductions, the social dynamics affecting consumption, the users' level of technological knowledge, and the volume of discourse attending to design. Thus, the article offers a holistic theory for understanding the strategic use of design in the context of technological production and, as such, advances recent work positioning design as a primary strategic challenge.

55. Wang, Y., Meister, D. B., & Gray, P. H. (2013). Social Influence and Knowledge Management Systems Use: Evidence from Panel Data. *MIS Quarterly*, *37*(1), 299–313.

*Theory suggests that coworkers may influence individuals' technology use behaviors, but there is limited research in the technology diffusion literature that explicates how such social influence processes operate after initial adoption. **We investigate how two key social influence mechanisms (identification and internalization) may explain the growth over time in individuals' use of knowledge management systems (KMS)-a technology** that because of its publicly visible use provides a rich context for investigating social influence. We test our hypotheses using longitudinal KMS usage data on over 80,000 employees of a management consulting firm. Our approach infers the presence of identification and internalization from associations between actual system use behaviors by a focal individual and prior system use by a range of reference groups. Evidence of these kinds of associations between system use behaviors helps construct a more complete picture of social influence mechanisms, and is to our knowledge novel to the technology diffusion literature. Our results confirm the utility of this approach for understanding <mark>social influence effects</mark> and reveal a fine-grained pattern of influence across different social groups: we found strong support for bottom-up social influence across hierarchical levels, limited support for peer-level influence within levels, and no support for top-down influence.*

56. Wood, S., & Hoeffler, S. (2013). Looking Innovative: Exploring the Role of Impression Management in High-Tech Product Adoption and Use. *Journal of Product Innovation Management*, *30*(6), 1254–1270. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/jpim.12134

Although consumer adoption of high-tech innovations is certainly influenced by the product's functional benefits, can the use of a new product confer social benefits as well? Specifically, can the mere use of an innovative product convey the impression that the user is an innovative person? Impression management (IM) is a well-established phenomenon in social psychology that refers to the human tendency to monitor, consciously or unconsciously, the efficacy of his or her communication of self to others. This research explores the role that IM motivations, or 'looking innovative,' play in consumers' use of new high-tech products, especially in the workplace-an environment in which innovativeness is clearly valued by employers and, thus, individuals have strong motivations to convey innovativeness as a personal characteristic. Data from both ethnographic and experimental methods demonstrate that (1) the use of new high-tech products can be a surprisingly effective social signal of one's 'tech savvy' and personal innovativeness; (2) this impression even significantly increases positive evaluations of secondary traits such as leadership and professional success; and (3) this effect differs by gender. Intriguingly, stronger benefits accrue for women than for men-a finding that runs counter to the backlash effect typically found in IM research in business settings (i.e., female job evaluations typically suffer after engaging in the same self-promoting IM strategies that benefit their male counterparts). Further, the data show that, even for <mark>professional recruiters</mark>, a momentary observation of a job candidate using a new high-tech product versus a low-tech equivalent significantly increases the candidate's evaluation and likelihood of being hired.

57. Ferguson, J., Soekijad, M., Huysman, M., & Vaast, E. (2013). Blogging for ICT4D: reflecting and engaging with peers to build development discourse. *Information Systems Journal*, *23*(4), 307–328. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/isj.12010

Information and Communication Technology-enabled Development (ICT4D) discourse relies upon the idea that ICTs can foster development in particular by encouraging wider participation in development initiatives. In this paper, we question how the blogging practices of development professionals shape such ICT4D discourse. Through a combination of interviews and analyses of blog

contents, we examine two major purposes of blogging: reflecting upon development practices and engaging with a self-selected audience. Our analyses reveal that these two purposes were interwoven in ways that contributed to making bloggers' ICT4D discourse innovative but oriented towards a small community of peers rather than a larger audience. Through blogging, development professionals refined their expertise on ICT4D. As they did so, they also generated a personal speaker's corner that primarily attracted like-minded peers rather than promoting larger participation in ICT4D discourse. This research contributes to the emerging literature on social media practices by showing how blogging practices enable the formation of what a discourse is about, and by highlighting differences between perceived and actual levels of interactions between bloggers and their audience. The paper also adds to the ICT and development literatures by revealing **that blogging practices can deepen ICT4D discourse**, but that they do not necessarily enhance participation in development. Such insight is crucial for development professionals to develop realistic expectations of blogging for ICT4D.

58. Lowry, P. B., Gaskin, J. E., Twyman, N. W., Hammer, B., & Roberts, T. L. (2013). Taking "Fun and Games" Seriously: Proposing the Hedonic-Motivation System Adoption Model (HMSAM). *Journal of the Association for Information Systems*, *14*(11), 617–671.

Hedonic-motivation systems (HMS)-systems used primarily to fulfill users' intrinsic motivations-are the elephant in the room for IS research. Growth in HMS sales has outperformed utilitarian-motivation systems (UMS) sales for more than a decade, generating billions in revenue annually; yet IS research focuses mostly on UMS. In this study, we explain the role of intrinsic motivations in systems use and propose the hedonic-motivation system adoption model (HMSAM) to improve the understanding of HMS adoption. Instead of a minor, general TAM extension, HMSAM is an HMS-specific system acceptance model based on an alternative theoretical perspective, which is in turn grounded in flow-based cognitive absorption (CA). The HMSAM extends van der Heijden's (2004) model of hedonic system adoption by including CA as a key mediator of perceived ease of use (PEOU) and of behavioral intentions to use (BIU) hedonic-motivation systems. Results from experiments involving 665 participants confirm that, in a hedonic context, CA is a more powerful and appropriate predictor of BIU than PEOU or joy, and that the effect of PEOU on BIU is fully mediated by CA sub-constructs. This study lays a foundation, provides guidance, and opens up avenues for future HMS, UMS, and **mixed-motivation system research**.

59. Junglas, I., Goel, L., Abraham, C., & Ives, B. (2013). The Social Component of Information Systems-How Sociability Contributes to Technology Acceptance. *Journal of the Association for Information Systems*, *14*(10), 585–616.

The adoption of information systems is often explained in terms of usefulness and ease of use. Lately, researchers have begun to recognize that a hedonic streak in human beings provides a further contributing factor in the adoption and acceptance of information systems. Embedded in this streak is a broader social aspect that incorporates not only the solitary, individual pleasure one gets from using the system, but also a pleasure that one gets from interacting and socializing with others through the system. This becomes particularly evident in virtual environments that support high levels of interaction with others and with artifacts embedded in an immersive context. By drawing on IS theories of technology acceptance and IS success, and on theories of social interaction from evolutionary psychology, activity theory, situated action, and distributed cognition, we test the construct of sociability and its antecedents in Second Life-a popular virtual environment. Our results support that, in addition to an information and system component, a social component contributes to IS usage.

60. Jiming Wu, & Xinjian Lu. (2013). Effects of Extrinsic and Intrinsic Motivators on Using Utilitarian, Hedonic, and Dual-Purposed Information Systems: A Meta-Analysis. *Journal of the Association for Information Systems*, *14*(3), 153–191.

While many studies have found that perceived usefulness-an extrinsic motivator-is the strongest determinant of using utilitarian systems, others have found that it is less important than perceived enjoyment-an intrinsic motivator-in predicting hedonic system

*usage. In light of these interesting but mixed findings, our research applies the motivation theory to investigate the effects of extrinsic and intrinsic motivators on system-use behavior in utilitarian, hedonic, and dual-purposed contexts. We then construct associated hypotheses and empirically test them by analyzing data collected from the literature. The results generally confirm our prediction that, in the context of utilitarian systems, extrinsic motivators are more important than intrinsic motivators, whereas, in the context of hedonic systems, intrinsic motivators play a more critical role than extrinsic motivators. The results thus substantiate our contention that, **when information systems vary from utilitarian to hedonic, the most important determinants shift from extrinsic to intrinsic motivators**. This paper contributes not only to a new application of the motivation theory to IT adoption, but also to an integrated and in-depth analysis of motivators, which may reorient IS scholars toward potentially more fruitful avenues for studying user behavior.*

61. Manroop, L., Boekhorst, J. A., & Harrison, J. A. (2013). The influence of cross-cultural differences on job interview selection decisions. *International Journal of Human Resource Management*, *24*(18), 3512–3533. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/09585192.2013.777675

How the interview process affects <mark>foreign-born job candidates</mark> *has received scant attention in recent research literature (Huffcutt 2011), even though the issue should be growing in importance given the massive influx of qualified migrants entering developed countries. This paper examines the job interview through the lens of national culture and argues that cross-cultural differences between interviewer and interviewee can affect interview judgement and evaluation. Drawing upon the literatures in cross-cultural research and social psychology, this paper presents a model of cross-cultural differences on interview outcomes. In so doing, this conceptual study advances theory that underpins the employment selection process of foreign-born job candidates, and also provides a platform on which future empirical research may be based.*

62. Posen, H. E., & Chen, J. S. (2013). An Advantage of Newness: Vicarious Learning Despite Limited Absorptive Capacity. *Organization Science*, *24*(6), 1701–1716. https://doi-org.scd-rproxy.u-strasbg.fr/10.1287/orsc.1120.0815

*Entrants are often viewed as suffering from a "liability of newness"--at founding, they rarely possess the knowledge E and capabilities necessary to compete and survive. They can overcome this liability by learning vicariously from the knowledge of incumbent firms. But how can entrants learn from external knowledge when they lack the prior related knowledge that forms the basis of absorptive capacity? **We theorize that the process of internal experiential learning facilitates learning from external knowledge, particularly for entrants.** To test this theory, we examine learning using a comprehensive set of* <mark>U.S. commercial banking firms,</mark> *including a full census of entrants. Our estimates suggest that the share of vicarious learning realized in the process of experiential learning is twice as large for entrants as for incumbents. In this sense, entrants enjoy an "advantage of newness" in learning.*

63. Goel, L., Johnson, N., Junglas, I., & Ives, B. (2013). Predicting users' return to virtual worlds: a social perspective. *Information Systems Journal*, *23*(1), 35–63. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/j.1365-2575.2011.00396.x

Virtual worlds or three-dimensional computer-based simulated environments have received considerable attention as platforms for entertainment, education and commerce. In contrast to a web site, for example, where a user interacts with a two-dimensional site, virtual worlds provide a platform in which users can interact with other individuals, sometimes including strangers, within three-dimensional environments. Virtual worlds afford a form of 'socialness' unlike many other technologies, often motivating a user - by virtue of these social experiences - to return. Drawing on the Spatial Model of Interaction and Awareness-Attention Theory, we demonstrate that besides social aspects, which include social awareness and social perception, flow experience, which is the mental state of being fully absorbed and somewhat lost in time, is an essential ingredient in an individual's decision to return to a virtual world. We also demonstrate how characteristics of the technology are linked to the social aspects experienced in virtual worlds. A laboratory study conducted in a virtual world, <mark>Second Life</mark>*, supports our assertions and identifies state predictors of flow that influence*

individuals' intentions to return to the virtual world environment.

64. Reinecke, K., & Bernstein, A. (2013). Knowing What a User Likes: A Design Science Approach to Interfaces That Automatically Adapt to Culture. *MIS Quarterly*, *37*(2), 427-A11.

*Adapting ==user interfaces== to a user's cultural background can increase satisfaction, revenue, and market share. Conventional approaches to catering for culture are restricted to adaptations for specific countries and modify only a limited number of interface components, such as the language or date and time formats. **We argue that a more comprehensive personalization of interfaces to cultural background is needed to appeal to users in expanding markets**. This paper introduces a low-cost, yet efficient method to achieve this goal: cultural adaptivity. Culturally adaptive interfaces are able to adapt their look and feel to suit visual preferences. In a design science approach, we have developed a number of artifacts that support cultural adaptivity, including a prototype web application. We evaluate the efficacy of the prototype's automatically generated interfaces by comparing them with the preferred interfaces of 105 Rwandan, Swiss, Thai, and multicultural users. The findings demonstrate the feasibility of providing users with interfaces that correspond to their cultural preferences in a novel yet effective manner.*

65. Ramarajan, L., & Reid, E. (2013). Shattering the Myth of Separate Worlds: Negotiating Nonwork Identities at Work. *Academy of Management Review*, *38*(4), 621–644. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/amr.2011.0314

*How much of our self is defined by our work? Fundamental changes in the social organization of work are destabilizing the relationship between work and the self. As a result, parts of the self traditionally considered outside the domain of work-that is, nonwork identities-are increasingly affected by organizations and occupations. Based on an interdisciplinary review of literature on identity and work, we develop a model of how people negotiate nonwork identities (e.g., national, gender, family) in the context of organizational/occupational pressures and personal preferences regarding this identity. We propose that the dual forces of pressures and preferences vary from inclusion (e.g., incorporating the nonwork identity within the work identity) to exclusion (e.g., keeping the identities separate). We suggest that the alignment or misalignment of these pressures and preferences shapes people's experience of the power relationship between themselves and their organization/occupation and affects how they manage their nonwork identities. **We describe how people enact different nonwork identity management strategies**--namely, assenting to, complying with, resisting, or inverting the pressures--and delineate the consequences of these strategies for people and their organizations/occupations.*

66. Henfridsson, O., & Bygstad, B. (2013). The Generative Mechanisms of Digital Infrastructure Evolution. *MIS Quarterly*, *37*(3), 907-A5.

*The current literature on digital infrastructure offers powerful lenses for conceptualizing the increasingly interconnected information system collectives found in contemporary organizations. However, little attention has been paid to the generative mechanisms of digital infrastructure, that is, the causal powers that explain how and why such infrastructure evolves over time. **This is unfortunate, since more knowledge about what drives digital infrastructures would be highly valuable for managers and IT professionals confronted by the complexity of managing them**. To this end, this paper adopts a critical realist view for developing a configurational perspective of infrastructure evolution. Our theorizing draws on a multimethod research design comprising an in-depth case study and a case survey. The in-depth case study, conducted at a ==Scandinavian airline,== distinguishes three key mechanisms of digital infrastructure evolution: adoption, innovation, and scaling. The case survey research of 41 cases of digital infrastructure then identifies and analyzes causal paths through which configurations of these mechanisms lead to successful evolution outcomes. The study reported in this paper contributes to the infrastructure literature in two ways. First, we identify three generative mechanisms of digital infrastructure and how they contingently lead to evolution outcomes. Second, we use these mechanisms as a basis for developing a configurational perspective that advances current knowledge about why some digital infrastructures evolve successfully while others do not. In addition, the paper demonstrates and discusses the efficacy of critical realism as a philosophical tradition for developing*

substantive contributions in the field of information systems.

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67. Xue, L., Ray, G., & Sambamurthy, V. (2012). Efficiency or Innovation: How Do Industry Environments Moderate the Effects of Firms' It Asset Portfolios? *MIS Quarterly*, *36*(2), 509–528. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/41703465

*Firms invest in a variety of information technologies and seek to align their IT asset portfolios with two key performance outcomes: efficiency and innovation. Existing research makes the universalistic assumption that both outcomes will always be realized through firms' IT asset portfolios. There has been limited research on the conditions under which firms' IT asset portfolios should be oriented more toward efficiency or innovation. Here, we argue that the nature of the industry where a firm competes will have a significant moderating effect on the link between firms' IT asset portfolios and efficiency or innovation outcomes. **Using panel data that covers a wide range of industry environments, we find that at lower levels of dynamism, munificence, and complexity, IT asset portfolios are associated with a greater increase in efficiency.** In contrast, in envinronments with higher levels of complexity, IT asset portfolios are associated with a greater increase in innovation (i.e.,development of new products and processes, and exploration of growth opportunities). These results provide insights about how firms could realize strategic alignment by tailoring their IT asset portfolios toward an efficiency or innovation focus.*

68. Jaspers, F., Prencipe, A., & Ende, J. (2012). Organizing Interindustry Architectural Innovations: Evidence from Mobile Communication Applications. *Journal of Product Innovation Management*, *29*(3), 419–431. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/j.1540-5885.2012.00915.x

*Technologies from different industries are increasingly being combined to create new products and services. A fundamental challenge for the successful development of these interindustry innovations is to combine the previously unconnected technologies in an entirely new product architecture. The development of the required architectural knowledge is especially challenging in an interindustry setting. For instance, specialists from the different industries are likely to have different routines and no prior ties. Given these considerations, this paper explores the conditions for the successful organization of the development process of interindustry architectural innovations. This study adopts a multiple case study design. Based on document analysis and semistructured interviews, three development projects were studied and compared. These projects involved the development of mobile communication applications for services that were already being provided by traditional means in other industry, that is, television, banking, and payment. To increase the likelihood of finding relevant theoretical insights, the three projects were selected based on their different organizational setups, that is, a contractual alliance of two large firms, an informal alliance of two large firms and one small firm, and an independent start-up together with its suppliers. The results show that development projects for interindustry architectural innovations are likely to benefit from an organizational form (1) that includes specialists from the relevant industries; (2) that facilitates intense coordination integration between these specialists; and (3) that facilitates timely decision making and conflict resolution. Interestingly, these organizational dimensions influence project performance jointly rather than individually. Hence, these results lay the ground for the development of a configurational theory. This is a clear contribution to the new product development literature because configurational theories in this field of research are underdeveloped. Configurational theories offer valuable insights for managers who have to make multiple decisions simultaneously rather than in isolation. In particular, this study shows how multiple organizational dimensions can be aligned to produce a synergistic effect, while taking into account the specific characteristics and challenges of interindustry architectural innovations. In particular, this study proposes intense collaborations between specialists from the different industries in which one of these specialists takes the lead. Of course, specialists should be responsible for their areas of expertise, but architectural decisions should be made by consensus and-whenever needed to speed up the process-by fiat. At the same time, t**he findings suggest that going it alone by start-ups as well as fifty-fifty collaborations between incumbents do not work well**

69. Roberts, N., & Grover, V. (2012). Leveraging Information Technology Infrastructure to Facilitate a Firm's Customer Agility and Competitive Activity: An Empirical Investigation. *Journal of Management Information Systems*, *28*(4), 231–270. https://doi-org.scd-rproxy.u-strasbg.fr/10.2753/MIS0742-1222280409

This paper investigates how information technology (IT) facilitates a firm's customer agility and, in turn, competitive activity. Customer agility captures the extent to which a firm is able to sense and respond quickly to customer-based opportunities for innovation and competitive action. Drawing from the dynamic capability and IT business value research streams, we propose that IT plays an important role in facilitating a "knowledge creating" synergy derived from the interaction between a firm's Web-based customer infrastructure and its analytical ability. This will enhance the firm's ability to sense customer-based opportunities. IT also plays an important role in "process enhancing" synergy obtained from the interaction between a firm's coordination efforts and its level of information systems integration, which facilitates the firm's ability to respond to those opportunities. We also leverage the competitive dynamics and strategic alignment literature to propose that the alignment between customer-sensing capability and customer-responding capability will impact the firm's competitive activity. We test our model with a two-stage research design in which we survey <mark>marketing executives of high-tech firms</mark>*. Our results show that a Web-based customer infrastructure facilitates a firm's customer-sensing capability; furthermore, analytical ability positively moderates this relationship. We also find that internal systems integration positively moderates the relationship between interfunctional coordination and a firm's customer-responding capability. Finally, our results show that agility alignment affects the efficacy of a firm's competitive actions. In particular, action efficacy is higher when sensing and responding capabilities are both high.*

70. Roberts, N., Galluch, P. S., Dinger, M., & Grover, V. (2012). Absorptive Capacity and Information Systems Research: Review, Synthesis, and Directions for Future Research. *MIS Quarterly*, *36*(2), 625-A6. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/41703470

Absorptive capacity is a firm's ability to identify, assimilate, transform, and apply valuable external knowledge.It is considered an imperative for business success. Modern information technologies perform a critical role in the development and maintenance of a firm's absorptive capacity. We provide an assessment of absorptive capacity in the information systems literature. IS scholars have used the absorptive capacity construct in diverse and often contradictory ways. Confusion surrounds how absorptive capacity should be conceptualized, its appropriate level of analysis, and how it can be measured. Our aim in reviewing this construct is to reduce such confusion by improving our understanding of absorptive capacity and guiding its effective use in IS research. We trace the evolution of the absorptive capacity construct in the broader organizational literature and pay special attention to its conceptualization, assumptions, and relationship to organizational learning.Following this, we investigate how absorptive capacity has been conceptualized, measured, and used in IS research. We also examine how absorptive capacity fits into distinct IS themes and facilitates understanding of various IS phenomena. Based on our analysis, we provide a framework through which IS researchers can more fully leverage **the rich aspects of absorptive capacity when investigating the role of information technology in organizations***.*

71. Kraaijenbrink, J. (2012). Integrating Knowledge and Knowledge Processes: A Critical Incident Study of Product Development Projects. *Journal of Product Innovation Management*, *29*(6), 1082–1096. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/j.1540-5885.2012.00953.x

Various scholars have argued that knowledge processes in organizations are integrally linked in practice. The extant literature though treats them separately and thereby disregards the interactions and tensions between them. A result of this way of studying knowledge processes is that little is known about their relative importance and how they work together. This paper addresses this gap in the literature through a critical incident study of knowledge processes in product development projects of high-tech small firms. The paper

*starts off with a conceptual framework comprised of four knowledge processes-knowledge creation, knowledge application, knowledge integration, and knowledge retention-and their interactions. From the framework, three hypotheses are derived concerning the importance of these types of knowledge processes and their interactions, which in turn guide the empirical research. The hypotheses were tested in a retrospective study of 58 critical incidents in product development projects of ==16 high-tech small firms in the Netherlands==. Data were collected through semi-structured interviews using the critical incident interviewing technique. Interviewees were asked to 'relive' and describe particular successful and unsuccessful examples of product development projects in the past. The analysis of the interview data focused upon whether there are differences between successful and unsuccessful projects in the types of knowledge processes and interactions that are performed. After coding all data into the various types of knowledge processes and interactions of the framework, t-tests were used to test for significance of differences. The findings indicate that the difference between success and failure in these projects lies primarily in the extent to which knowledge integration and integration between knowledge processes have taken place. These findings demonstrate that, of the four knowledge processes, knowledge integration had the most significant impact on product development project success. **The study demonstrates furthermore that higher degrees of interactions between knowledge processes were also associated with project success.** Despite the limitations of this study, these results provide empirical support for the claim that integration is a key factor in organizations in general and in innovation projects in particular. For academics, this suggests further research on knowledge integration, and integration between knowledge processes, is warranted. For practitioners, it means that integration is a key process to be considered when choosing and executing new product development projects.*

72. Rai, A., Pavlou, P. A., Im, G., & Du, S. (2012). Interfirm It Capability Profiles and Communications for Cocreating Relational Value: Evidence from the Logistics Industry. *MIS Quarterly*, *36*(1), 233-A5. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/41410416

This study seeks to identify the means by which information technology helps cocreate relational value in the context of interfirm relationships in the logistics industry--a large and information-intensive industry. We identify a set of IT functionalities-single-location shipping, multilocation shipping, ==supply chain visibility==, and financial settlement--that can be used to manage the flows of physical goods, information, and finances across locations in interfirm logistics processes. Progressively more advanced sets of IT functionalities, when implemented and used in the interfirm relationship to execute logistics processes, are proposed to form four distinct IT capability profiles of increased sophistication. Interfirm IT capability profiles of higher sophistication are proposed to help cocreate greater relational value by facilitating the flows of physical goods, information, and finances across locations in the interfirm logistics process. Besides their direct role in helping cocreate relational value, these interfirm IT capability profiles are proposed to further enhance relational value cocreation when complemented by interfirm communications for business development and IT development. Our empirical study was situated in one of the world's largest logistics suppliers and over 2,000 of its interfirm relationships with buyers across industries. Integrated data from four archival sources on the IT functionalities implemented and used in interfirm logistics relationships, interfirm communications, relational value (share of wallet and loyalty), and multiple control variables were collected. The results show that the proposed interfirm IT capability profiles and interfirm communications have both a direct and an interaction effect on relational value. Implications for cocreating relational value in interfirm relationships with the aid of IT are discussed.

73. Akgün, A. E., Keskin, H., Lynn, G., & Dogan, D. (2012). Antecedents and consequences of team sensemaking capability in product development projects. *R&D Management*, *42*(5), 473–493. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/j.1467-9310.2012.00696.x

With the increasing popularity of organizational sensemaking in the literature, sensemaking capability of firms attracts many researchers and practitioners from different fields. Nevertheless, sensemaking capability is rarely addressed in the new product development (NPD) project teams in the technology and innovation management literature. Specifically, we know little about what team sensemaking capability is, its ingredients and benefits, and how it works in NPD projects (e.g., its antecedents and

consequences). By investigating 92 NPD project teams, we found that (1) team sensemaking capability, which is composed of internal and external communication, information gathering, information classification, building shared mental models, and taking experimental actions, has a positive impact on the information implementation and speed-to-market; (2) information implementation and speed-to-market mediate the relationship between team sensemaking capability and new product success; and (3) team sensemaking capability mediates the relationship between team processes and information implementation and partially mediates the relationship between team processes and speed-to-market. **We also found that team autonomy, interpersonal trust among team members, and open-mindedness of team members positively influence the development of team sensemaking capability.** *Theoretical and managerial implications of the study findings are discussed.*

74. Ke, W., Tan, C.-H., Sia, C.-L., & Wei, K.-K. (2012). Inducing Intrinsic Motivation to Explore the Enterprise System: The Supremacy of Organizational Levers. *Journal of Management Information Systems*, *29*(3), 257–290. https://doi-org.scd-rproxy.u-strasbg.fr/10.2753/MIS0742-1222290308

The adoption of an organization-wide system, such as an enterprise system (ES), has often been mandated by organizational management, which may not necessarily motivate users to proactively explore the system's features and subsequently apply pertinent features that best support their job tasks. Anchoring on self-determination theory, this research investigates the antecedents and consequences of users' intrinsic motivation to explore ES features. We propose two organizational levers (i.e., autonomous job design and socialization tactics) that the management could exercise to trigger intrinsic motivation, thereby leading to improved ES feature exploration. Intrinsic motivation is manifested by hedonic motivation and normative motivation, whereas ES feature exploration is conceptualized as a dual-dimensional outcome reflected by cognitive behavior (exploratory usage) and positive affect (exploration satisfaction). Through a two-stage survey of 127 organizational users in China, we find general support for our research model. We further observe significant moderating effects of prevention focus on the association between organizational levers and intrinsic motivations. Beyond demonstrating how organizational users respond to different organizational levers, this research examines a broader, enduring challenge, which is to determine how organizational users can be induced to be intrinsically inspired to innovatively harness implemented information systems.

75. Sheng, M. (2012). The utilitarian and social dual presence in Web 2.0 services. *Total Quality Management & Business Excellence*, *23*(7/8), 875–890. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/14783363.2012.704276

A unidimentional construct of utilitarianism in exploring the adoption of Web 2.0 services is not enough to capture the complexity of user experience. There is a need to pursue a broader conceptualisation that goes beyond the utilitarian presence that has dominated studies in innovation adoption, and incorporates social presence as well. The results suggest that the utilitarian and social dual presence provide a richer insight into the nature of user experience in the Web 2.0 services. Further, this study discovers the users' continuance intention beyond utilitarian benefit sought but more social-oriented. Users are preferential to the social superior option when the minimum utilitarian benefits are met. Users are more interested in the social links that come from service affiliations than the service itself. The differences in magnitudes of effects of utilitarian and social presence provide insights for designers and managers to prioritise resources and to personalise the service's interface design.

76. Parry, M. E., Kawakami, T., & Kishiya, K. (2012). The Effect of Personal and Virtual Word-of-Mouth on Technology Acceptance. *Journal of Product Innovation Management*, *29*(6), 952–966. https://doi-org.scd-rproxy.u-strasbg.fr/10.1111/j.1540-5885.2012.00972.x

This paper extends the Technology Acceptance Model (TAM) to incorporate the impact of personal and virtual word-of-mouth (p WOM and v WOM). The authors hypothesize that both types of word-of-mouth will be positively related with consumer perceptions of innovation usefulness and perceived ease of use. In addition, the authors examine two competing hypotheses regarding the relative

impact of p WOM and v WOM on perceptions of innovation attributes. One hypothesis argues that potential adopters place more weight on p WOM sources because they perceive relatively more similarity between themselves and p WOM sources. The alternative hypothesis argues that potential adopters place more weight on v WOM sources because those sources (relative to p WOM sources) expose potential adopters to a wider variety of information and a larger number of experts. Finally, the authors argue that symbolic product usage will enhance the relationship between word-of-mouth and consumer perceptions of innovation attributes. ==These hypotheses are tested using data collected in Japan from over 600 potential adopters of Blu-ray DVD recorders and smart phones.== Findings indicate that, in both product categories, p WOM and v WOM are positively and significantly related with perceived ease of use. Moreover, in both samples p WOM is positively and significantly related with perceived usefulness, while v WOM is significantly related with perceived usefulness only in the smart phone sample. With regard to the relative impact of pWOM and v WOM on perceptions of innovation attributes, results indicate that v WOM has a larger impact on potential adopter perceptions of ease of use. Finally, the estimated model provides support for the hypothesis that symbolic consumption increases the impact of word-of-mouth on perceptions of innovation attributes. In particular, findings indicate that the impact of pWOM on perceptions of innovation usefulness is higher among potential adopters of smart phones than among potential adopters of Blu-ray DVD recorders. Similarly, the impact of vWOM on perceptions of ease of use is higher among potential smart phone adopters than among potential adopters of Blu-ray DVD recorders.

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77. Pagani, M., & Mirabello, A. (2011). The Influence of Personal and Social-Interactive Engagement in Social TV Web Sites. *International Journal of Electronic Commerce*, *16*(2), 41–68. https://doi-org.scd-rproxy.u-strasbg.fr/10.2753/JEC1086-4415160203

Traditional retail and online brands seek new ways to build a platform to enable customers to connect with one another and encourage consumer engagement. The purpose of the present work is to understand how social media is transforming consumer engagement and redefining commercial marketing strategies using video on the Web, mobile devices, and traditional TV. We develop and validate a conceptual model of how experiential personal engagement and social-interactive engagement influence active and passive behavior in the emerging form of television that supports and integrates social interaction. The paper describes how personal engagement with the content and social-interactive engagement (resulting from the perceived sense of community, intrinsic enjoyment, and participation experience) differentially influence both active and passive behavior. ==We test hypotheses using structural equation modeling with survey data from a sample of 814 U.S. and European social TV users.== Invariance analyses show the different effect of gender and level of interaction provided (social features) by the social TV Web site. Implications for contextual advertising and social commerce are discussed.

78. Cenfetelli, R. T., & Schwarz, A. (2011). Identifying and Testing the Inhibitors of Technology Usage Intentions. *Information Systems Research*, *22*(4), 808–823. https://doi-org.scd-rproxy.u-strasbg.fr/10.1287/isre.1100.0295

An important area of information systems (IS) research has been the identification of the individual-level beliefs that enable technology acceptance such as the usefulness, reliability, and flexibility of a system. This study posits the existence of additional beliefs that inhibit usage intentions and thus foster technology rejection rather than acceptance. We theorize that these inhibitors are more than just the antipoles of enablers (e.g., the opposite of usefulness or reliability) and so are distinct constructs worthy of their own investigation. Inhibitors are proposed to have effects on usage intentions beyond that of enablers as well as effects on enablers themselves. We report on a series of empirical studies designed to test the existence and effects of inhibitors. A candidate set of six inhibitors is shown to be distinct from enablers. These inhibitors are subsequently tested in a field study of 387 individuals nested within 32 different websites. Effects at both individual and website unit levels of analysis are tested using multilevel modeling. **We find that inhibitors have negative effects on usage intentions, as well as on enablers, and these effects vary contingent upon individual or website unit levels of analysis**. The overall results support the existence and importance of inhibitors in explaining individual intent to use-or not use-technology.

79. Nah, F. F.-H., Eschenbrenner, B., & DeWester, D. (2011). Enhancing Brand Equity through Flow and Telepresence: A Comparison of 2D and 3D Virtual Worlds. *MIS Quarterly*, *35*(3), 731-A19. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/23042806

*This research uses theories of flow, telepresence, positive emotions, and brand equity to examine the effect of using two-dimensional versus three-dimensional virtual world environments on telepresence, enjoyment, brand equity, and behavioral intention. The findings suggest that the ==3D virtual world environment== produces both positive and negative effects on brand equity when compared to the 2D environment. The positive effect of the 3D virtual world environment on brand equity occurs through telepresence, a specific aspect of flow, as well as enjoyment. The negative effect on brand equity can be explained using distraction-conflict theory in which attentional conflicts faced by users of a highly interactive and rich medium resulted in distractions from attending to the brand. Brand equity, in turn, has a positive effect on behavioral intention. The results suggest that although the 3D virtual world environment has the potential to increase brand equity by offering an immersive and enjoyable virtual product experience, the rich environment can also be a distraction. Therefore, developers of virtual world branding sites need to take into account limitations in the information processing capacity and attention span of users when designing their sites in order to avoid cognitive overload, which can lead to users being distracted from branding information. This paper not only provides a theoretical foundation for **explaining users' experience with 2D versus 3D virtual world branding sites**, but also provides insights to practitioners for designing 3D virtual world sites to enhance brand equity and intentions through user engagement.*

80. Aral, S. (2011). Identifying Social Influence: A Comment on Opinion Leadership and Social Contagion in New Product Diffusion. *Marketing Science*, *30*(2), 217–223. https://doi-org.scd-rproxy.u-strasbg.fr/10.1287/mksc.1100.0596

I suggest five broad directions for future research on social influence and opinion leadership that could, if appropriately addressed, dramatically improve how we conceptualize and manage social contagions in a variety of domains.

81. Goel, L., Johnson, N. A., Junglas, I., & Ives, B. (2011). From Space to Place: Predicting Users' Intentions to Return to Virtual Worlds. *MIS Quarterly*, *35*(3), 749-A5. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/23042807

==Virtual worlds== have received considerable attention as platforms for entertainment, education, and commerce. But organizations are experiencing failures in their early attempts to lure customers, employees, or partners into these worlds. Among the more grievous problems is the inability to attract users back into a virtual environment. In this study, we propose and test a model to predict users' intentions to return to a virtual world. Our model is based on the idea that users intend to return to a virtual world having conceived of it as a "place" in which they have had meaningful experiences. We rely on the interactionist theory of place attachment to explain the links among the constructs of our model. Our model is tested via a lab experiment. We find that users' intentions to return to a virtual world is determined by a state of deep involvement (termed cognitive absorption) that users experience as they perform an activity and tend to lose track of time. In turn, cognitive absorption is determined by users' awareness of whom they interact with and how they interact within a virtual world, what they interact about, and where, in a virtual sense, such interaction occurs. Our work contributes to theory in the following ways: it identifies state predictors of cognitive absorption, it conceives of virtual worlds in such a way as to account for users' experiences through the notion of place, and it explains how the properties of a virtual world contribute to users' awareness.

82. Weiyin Hong, Thong, J. Y. L., Chasalow, L. C., & Dhillon, G. (2011). User Acceptance of Agile Information Systems: A Model and Empirical Test. *Journal of Management Information Systems*,

28(1), 235–272. https://doi-org.scd-rproxy.u-strasbg.fr/10.2753/MIS0742-1222280108

In response to the rapid changes in users' requirements, a new generation of information systems (IS), namely, agile IS, has emerged. Agile IS, defined as information systems developed using agile methods, are characterized by frequent upgrades with a small number of new features released periodically. The existing research on agile IS has mainly focused on the developers' perspective with little research into end users' responses to these agile IS. Drawing upon the tripartite model of attitude, the status quo and the omission bias theories, and the availability heuristic, we propose a model that utilizes constructs from the unified theory of acceptance and use of technology, the IS continuance model, habit, and individual differences to examine the drivers of user acceptance of agile IS. Further, we investigate not only users' intentions to continue using the agile IS but also their intentions to use new features when they are released, which is a surrogate for the ultimate success of agile IS. Data from 477 users of an agile IS showed that users' level of comfort with constant changes, the facilitating conditions provided, and users' habit are predictors of both types of intentions, with users' level of comfort with constant changes being the strongest predictor. Users' intentions to continue using agile IS are also determined by users' satisfaction with and perceived usefulness of the past upgrades. Finally, users who are innovative are more likely to use future releases of new features. The present work fills a gap in the ==software engineering== literature and contributes a technology acceptance model specific to agile IS, which are becoming a mainstay of companies' IT portfolio in a fast-changing business environment.

83. Nan, N. (2011). Capturing Bottom-Up Information Technology Use Processes: A Complex Adaptive Systems Model. *MIS Quarterly*, *35*(2), 505-A7. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/23044054

Although information systems researchers have long recognized the possibility for collective- level information technology use patterns and outcomes to emerge from individual-level IT use behaviors, few have explored the key properties and mechanisms involved in this bottom-up IT use process. This paper seeks to build a theoretical framework drawing on the concepts and the analytical tool of complex adaptive systems (CAS) theory. The paper presents a CAS model of IT use that encodes a bottom-up IT use process into three interrelated elements: agents that consist of the basic entities of actions in an IT use process, interactions that refer to the mutually adaptive behaviors of agents, and an environment that represents the social organizational contexts of IT use. Agent-based modeling is introduced as the analytical tool for computationally representing and examining the CAS model of IT use. The operationability of the CAS model and the analytical tool are demonstrated through a theory-building exercise translating an interpretive case study of IT use to a specific version of the CAS model. While Orlikowski (1996) raised questions regarding the impacts of employee learning, IT flexibility, and workplace rigidity on IT-based organization transformation, the CAS model indicates that these factors in individual-level actions do not have a direct causal linkage with organizational- level IT use patterns and outcomes. This theory-building exercise manifests the intriguing nature of the bottom-up IT use process: collective-level IT use patterns and outcomes are the logical and yet often unintended or unforeseeable consequences of individual-level behaviors. The CAS model of IT use offers opportunities for expanding the theoretical and methodological scope of the IT use literature.

84. **Faraj, S., Jarvenpaa, S. L., & Majchrzak, A. (2011). Knowledge Collaboration in Online Communities.** *Organization Science*, *22*(5), 1224–1239. https://doi-org.scd-rproxy.u-strasbg.fr/10.1287/orsc.1100.0614

The article focuses on online communities (OCs), a virtual organizational form including the occurrences of knowledge collaboration within the members of organizations. It says that the characteristics of OCs that acquires collaboration is the fluidity, which generates a dynamic flow of resources in and out of the community including the passion, identity and social disembodiment of ideas. It states that the knowledge collaboration in OCs involves individual acts which include the offering, recombining, and integrating of knowledge to others. Moreover, knowledge collaboration is a critical element for the sustainability of OCs.

85. ANAND, S., VIDYARTHI, P. R., LIDEN, R. C., & ROUSSEAU, D. M. (2010). Good Citizens in Poor-Quality Relationships: Idiosyncratic Deals as a Substitute for Relationship Quality. *Academy of Management Journal*, *53*(5), 970–988. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/AMJ.2010.54533176

*Idiosyncratic deals ("i-deals") are special arrangements that individuals negotiate with their employers. This study investigates the link between i-deals and organizational citizenship behavior (OCB). From the perspective of social exchange theory, **the relationship between individuals' i-deals and OCB should depend on the quality of workplace relationships with their supervisors, colleagues, and organization.** Measuring these respectively as leader-member exchange (LMX), team-member exchange (TMX), and perceived organizational support (POS), we tested hypotheses via data gathered from 231 supervisor-subordinate dyads nested in 53 work groups. Results reveal stronger positive relations between i-deals and OCB for employees with low rather than high LMX or TMX.*

86. Beaudry, A., & Pinsonneault, A. (2010). The Other Side of Acceptance: Studying the Direct and Indirect Effects of Emotions on Information Technology Use. *MIS Quarterly*, *34*(4), 689-A3. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/25750701

Much ado has been made regarding user acceptance of new information technologies. However, research has been primarily based on cognitive models and little attention has been given to emotions. This paper argues that emotions are important drivers of behaviors and examines how emotions experienced early in the implementation of new IT applications relate to IT use. We develop a framework that classifies emotions into four distinct types: challenge, achievement, loss, and deterrence emotions. The direct and indirect relationships between four emotions (excitement, happiness, anger, and anxiety) and IT use were studied through a survey of 249 bank account managers. Our results indicate that excitement was positively related to IT use through task adaptation. Happiness was directly positively related to IT use and, surprisingly, was negatively associated with task adaptation, which is a facilitator of IT use. Anger was not related to IT use directly, but it was positively related to seeking social support, which in turn was positively related to IT use. Finally, anxiety was negatively related to IT use, both directly and indirectly through psychological distancing. Anxiety was also indirectly positively related to IT use through seeking social support, which countered the original negative effect of anxiety. Post hoc ANOVAs were conducted to compare IT usage of different groups of users experiencing similar emotions but relying on different adaptation behaviors. Thepaper shows that emotions felt by users early in the implementation of a new IT have important effects on IT use. As such, the paper provides a complementary perspective to understanding acceptance and antecedents of IT use. By showing the importance and complexity of the relationships between emotions and IT use, the paper calls for more research on the topic.

87. Brown, S. A., Dennis, A. R., & Venkatesh, V. (2010). Predicting Collaboration Technology Use: Integrating Technology Adoption and Collaboration Research. *Journal of Management Information Systems*, *27*(2), 9–53. https://doi-org.scd-rproxy.u-strasbg.fr/10.2753/MIS0742-1222270201

The paper presents a model integrating theories from collaboration research (i.e., social presence theory, channel expansion theory, and the task closure model) with a recent theory from technology adoption research (i.e., unified theory of acceptance and use of technology, abbreviated to UTAUT) to explain the adoption and use of collaboration technology. We theorize that collaboration technology characteristics, individual and group characteristics, task characteristics, and situational characteristics are predictors of performance expectancy, effort expectancy, social influence, and facilitating conditions in UTAUT. We further theorize that the UTAUT constructs, in concert with gender, age, and experience, predict intention to use a collaboration technology, which in turn predicts use. We conducted two field studies in Finland among (1) 349 short message service (SMS) users and (2) 447 employees who were potential

*users of a new collaboration technology in an organization. Our model was supported in both studies. The current work contributes to research **by developing and testing a technology-specific model of adoption in the collaboration context.***

88. Cavusoglu, H., Hu, N., Li, Y., & Ma, D. (2010). Information Technology Diffusion with Influentials, Imitators, and Opponents. *Journal of Management Information Systems*, *27*(2), 305–334. https://doi-org.scd-rproxy.u-strasbg.fr/10.2753/MIS0742-1222270210

*Information technology (IT) innovations follow a diverse set of diffusion patterns. Early diffusion models explaining technology diffusion patterns assumed that there is a single homogeneous segment of potential adopters. It was later shown that a two-segment model considering two groups of adopters explains variations in diffusion patterns better than the existing one-segment models. While the two-segment model considers a group of adopters promoting adoption by exerting a positive influence on prospective adopters, it does not consider the members of society who aim to inhibit the adoption process by exerting a negative influence on prospective adopters. In fact, most IT innovations face opposition. Yet it is not clear how opposition affects the diffusion process. In this paper, **we model the diffusion of an IT innovation through its target population with three types of actors: influentials,** who are autonomous in adopting new technology and promote its adoption; **opponents**, who are opposed to the technology and inhibit its adoption; and **imitators**, who are information seekers, thus affected by both influentials and opponents. We show that opponents play a crucial role in determining the diffusion path of an innovation. The empirical tests using real as well as simulated data sets demonstrate the ability of our model to fit the data better and to identify the segments of adopters correctly.*

89. Sarker, S., & Valacich, J. S. (2010). An Alternative to Methodological Individualism: A Non-Reductionist Approach to Studying Technology Adoption by Groups. *MIS Quarterly*, *34*(4), 779-A3. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/25750705

*Studies on groups within the MIS discipline have largely been based on the paradigm of methodological individualism. Commentaries on methodological individualism within the reference disciplines suggest that studies embracing this paradigm can lead to potentially misleading or incorrect conclusions. **This study illustrates the appropriateness of the alternate non-reductionist approach to investigating group-related phenomenon, specifically in the context of technology adoption.** Drawing on theories of group influence, prior research on conflict, technology characteristics, task- technology fit, group communication media, and recent theoretical work surrounding group technology adoption, the paper proposes and empirically tests a new non-reductionist model for conceptualizing technology adoption by groups. Further, the study also empirically compares this nonreductionist model with a (hypothetical) methodological individualist model of technology adoption by groups. Results strongly support most of the assertions of the non-reductionist model and highlight that this model provides a more robust explanation of technology adoption by groups than a methodological individualist view. Further, the study also highlights some conditions wherein the methodological individualist view fails to provide correct explanations. The implications of the study's findings for future research are discussed.*

90. Narula, R., & Dunning, J. H. (2010). Multinational Enterprises, Development and Globalization: Some Clarifications and a Research Agenda. *Oxford Development Studies*, *38*(3), 263–287. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/13600818.2010.505684

This paper considers how economic globalization has affected opportunities and challenges for developing countries in following a multinational enterprise (MNE)-assisted development strategy, revisiting an earlier article by the authors. The growing share of industrial activity owned and/or controlled by MNEs has not—by and large—led to a proportional increase in sustainable domestic industrial growth. Particular attention is paid to how MNEs have responded proactively to globalization by modifying their strategies, spatial organization and the modalities by which they interact with host economic actors, and how these changes alter our understanding of MNEs and development. What has been learnt over the last decade about embeddedness, institutions, inertia, absorptive capacity, spillovers and linkages, and how they can explain the success of some countries (or regions) in promoting growth,

and the failure of others, is examined. The need to link MNE and industrial policies systematically is highlighted. Attracting the "right kinds" of MNE activity remains important, but greater heterogeneity of MNE activity and host locations requires greater customization of policy tools.

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91. Wu, J., & Lederer, A. (2009). A Meta-Analysis of the Role of Environment-Based Voluntariness in Information Technology Acceptance. *MIS Quarterly*, *33*(2), 419-A-9.

The technology acceptance model (TAM) asserts that ease of use and usefulness are two primary determinants of behavioral intention and usage. *A parallel research stream emphasizes voluntariness, a key social influence and contextual variable, as a critical factor in information technology (IT) adoption, but pays little attention to its role in TAM. This paper addresses this particular absence by investigating the impact of environment-based voluntariness on the relationships among the four primary TAM constructs. A meta-analysis of 71 empirical studies provides strong support for the hypotheses that environment-based voluntariness moderates the effects of ease of use and usefulness on behavioral intention, but not the effect of ease of use on usefulness. Moreover, inconsistent with our expectations, environment-based voluntariness does not moderate the effects of ease of use and usefulness on usage. By further analyzing the data set, we suggest this may be because of the relatively small sample size, the presence of other factors, or the inappropriate measurement of usage in previous studies. The current study contributes not only to the distinction between user-based and environment-based voluntariness but also to a more complete understanding of user acceptance of IT across system-use environments.*

92. Ortiz de Guinea, A., & Markus, M. L. (2009). Why Break the Habit of a Lifetime? Rethinking the Roles of Intention, Habit, and Emotion in Continuing Information Technology Use. *MIS Quarterly*, *33*(3), 433–444. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/20650303

One of the most welcome recent developments in Information Systems scholarship has been the growing interest in individuals' continuing use of information technology well after initial adoption, known in the literature <mark>as IT usage, IT continuance, and post-adoptive IT usage.</mark> *In this essay, we explore the theoretical underpinnings of IS research on continuing IT use. Although the IS literature on continuing* **IT use emphasizes the role of habitual behavior that does not require conscious behavioral intention***, it does so in a way that largely remains faithful to the theoretical tradition of planned behavior and reasoned action. However, a close reading of reference literatures on automatic behavior (behavior that is not consciously controlled) and the influences of emotion on behavior suggests that planned behavior and reasoned action may not provide the best theoretical foundation for the study of continuing IT use. As a result, we call for empirical research that directly compares and contrasts the consensus theory of continuing IT use with rival theories that place much greater emphasis on unplanned and unreasoned action.*

93. Wang, P., & Ramiller, N. C. (2009). Community Learning in Information Technology Innovation. *MIS Quarterly*, *33*(4), 709–734. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/20650324

In striving to learn about an information technology innovation, organizations draw on knowledge resources available in the community of diverse interests that convenes around that innovation. But even as such organizations learn about the innovation, so too does the larger community. Community learning takes place as its members reflect upon their learning and contribute their experiences, observations, and insights to the community's on-going discourse on the innovation. Community learning and organizational learning thus build upon one another in a reciprocal cycle over time, as the stock of interpretations, adoption rationales, implementation strategies, and utilization patterns is expanded and refined. We advance an overall model of this learning cycle, drawing on two community-level theories (management fashion and organizing vision), both of which complement the dominant emphases of the literature on IT innovation and learning. Relative to this cycle, we then empirically examine, in particular, the dependence of community learning on organizational learning. Sampling the public discourse on enterprise resource planning <mark>(ERP)</mark> *over a 14-year period, we explore how different kinds of organizational actors can play different roles, at different times, in*

*contributing different types of knowledge to **an innovation's public discourse**. The evidence suggests that research analysts and technology vendors took leadership early on in articulating the "know-what" (interpretation) and "know-why" (rationales) for ERP, while later on adopters came to dominate the discourse as its focus shifted to the "know-how" (strategies and capabilities). We conclude by identifying opportunities for further inquiry on and strategic management of community learning and its interactions with organizational learning.*

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94. Jones, M. R., & Karsten, H. (2008). Giddens's Structuration Theory and Information Systems Research. *MIS Quarterly*, *32*(1), 127–157. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/25148831

*The work of the contemporary British sociologist Anthony Giddens, and in particular his structuration theory, has been widely cited by Information Systems researchers. **This paper presents a critical review of the work of Giddens** and its application in the Information Systems field. Following a brief overview of Giddens's work as a whole, some key aspects of structuration theory are described, and their implications for Information Systems research discussed. We then identify 331 Information Systems articles published between 1983 and 2004 that have drawn on Giddens's work and analyze their use of structuration theory. Based on this analysis a number of features of structurational research in the Information Systems field and its relationship to Giddens's ideas are discussed. These findings offer insight on Information Systems researchers' use of social theory in general and suggest that there may be significant opportunities for the Information Systems field in pursuing structurational research that engages sympathetically, yet critically, with Giddens's work.*

95. VANCE, A., ELIE-DIT-COSAQUE, C., & STRAUB, D. W. (2008). Examining Trust in Information Technology Artifacts: The Effects of System Quality and Culture. *Journal of Management Information Systems*, *24*(4), 73–100. https://doi-org.scd-rproxy.u-strasbg.fr/10.2753/MIS0742-1222240403

*The topic of trust in information technology (IT) artifacts has piqued interest among researchers, but studies of this form of trust are not definitive regarding which factors contribute to it the most. Our study empirically tests a model of trust in IT artifacts that increases our understanding in two ways. First, it sets forth two previously unexamined system quality constructs--navigational structure and visual appeal. We found that both of these system quality constructs significantly predict the extent to which <mark>users place trust in mobile commerce technologies.</mark> Second, our study considers the effect of culture by comparing the trust of French and American potential users in m-commerce technologies. **We found that not only does culture directly affect user trust in IT artifacts but it also moderates the extent to which navigational structure affects this form of trust.** These findings show that system quality and culture significantly affect trust in the IT artifact and point to rich possibilities for future research in these areas.*

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96. Doak, J., & Karadimitriou, N. (2007). (Re)development, Complexity and Networks: A Framework for Research. *Urban Studies (Routledge)*, *44*(2), 209–229. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/00420980601074953

This paper presents a conceptual framework for the examination of land redevelopment based on a <mark>complex systems/networks approach.</mark> The agents and networks involved in property development can be seen as constituents of structures that perform complex processes. These structures interact, forming new more complex structures and networks. Redevelopment then can be conceptualised

as a process of transformation: a complex system, involving developers, planners, landowners, investors, community groups, etc., through which a previously used site is transformed into new network space. Analysis of network relations points towards the 'duality' of structure and agency in these processes of system transformation and change. Insights from **actor network theory** can be conjoined with notions of complexity and chaos to build an understanding of the ways in which actors actively seek to shape these structures and systems, whilst at the same time being recursively shaped by them in their strategies and actions. Better understanding of the interactions between actors and the emergent qualities of the networks they form can improve our comprehension of the complex socio-spatial phenomena that redevelopment comprises.

97. Glazer, R. (2007). Meta-Technologies and Innovation Leadership: WHY THERE MAY BE NOTHING NEW UNDER THE SUN. *California Management Review*, *50*(1), 120–143. https://doi-org.scd-rproxy.u-strasbg.fr/10.2307/41166419

The article discusses a conceptual framework for helping organizations to deal with two dilemmas associated with business innovation: the perceived need to bring new products to market while simultaneously respecting consumer preferences; and the perception that innovators can become obsolete once their innovation is overtaken by a disruptive technology. The author proposes that consumers purchase benefits which are generic in nature, and the core technologies on which innovations are based are also generic in nature. In this approach, there are no truly disruptive innovations because it is only the features of a product, not the underlying services, that are innovative. Underlying benefits sought by consumers include freedom of choice, conservation of resources, and ease of adoption.

98. Todorova, G., & Durisin, B. (2007). Absorptive Capacity: Valuing a Reconceptualization. *Academy of Management Review*, *32*(3), 774–786. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/AMR.2007.25275513

Zahra and George (2002) suggested a reconceptualization of the absorptive capacity construct in order to reduce ambiguity in empirical studies. A rereading of the **seminal Cohen and Levinthal (1990)** article in light of current research on learning and innovation directs our attention to serious ambiguities and omissions in Zahra and George's reconceptualization. We suggest a reintroduction of "recognizing the value," an alternative understanding of "transformation," a clarification of "potential absorptive capacity," an elaboration of the impact of socialization mechanisms, an investigation of the role of "power relationships," and an inclusion of feedback loops in a dynamic model of absorptive capacity.

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99. Jansen, J. J. P., Van Den Bosch, F. A. J., & Volberda, H. W. (2006). Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental Moderators. *Management Science*, *52*(11), 1661–1674. https://doi-org.scd-rproxy.u-strasbg.fr/10.1287/mnsc.1060.0576

Research on exploration and exploitation is burgeoning, yet our understanding of the antecedents and consequences of both activities remains rather unclear. We advance the growing body of literature by focusing on the apparent differences of **exploration and exploitation** and examining implications for using formal (i.e., centralization and formalization) and informal (i.e., connectedness) coordination mechanisms. This study further examines how environmental aspects (i.e., dynamism and competitiveness) moderate the effectiveness of exploratory and exploitative innovation. Results indicate that centralization negatively affects exploratory innovation, whereas formalization positively influences exploitative innovation. Interestingly, connectedness within units appears to be an important antecedent of both exploratory and exploitative innovation. Furthermore, our findings reveal that pursuing exploratory innovation is more effective in dynamic environments, whereas pursuing exploitative innovation is more beneficial to a unit's financial performance in more competitive environments. Through this richer explanation and empirical assessment, we contribute to a greater clarity and better understanding of how ambidextrous organizations coordinate the development of exploratory and exploitative

innovation in organizational units and successfully respond to multiple environmental conditions.

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100.   Torre, A., & Rallet, A. (2005). Proximity and Localization. *Regional Studies*, *39*(1), 47–59. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/0034340052000320842

*The objective of this paper is to pave the way for an analysis of the relations between proximity and localization of activities and people, two notions that are often mistaken for one another. Our method consists in exploiting the semantic wealth of the notion of proximity. We distinguish two types of proximity (geographical and organized) and propose a grid of analysis of the main models of geographic organization of activities by articulating both types of proximity. **We then introduce the phenomenon of tension between geographical and organized proximity in order to discuss problems that are often underestimated in spatial economy.** First, organized proximity offers powerful mechanisms of long-distance coordination that constitute the foundation of the increasing geographical development of socio-economic interactions. The confusion between information interactions and knowledge exchange, and the constraint of being located in proximity neglects the fact that the collective rules and representations do manage, and at a distance, an increasing part of these interactions. It is then shown that there is a disjunction between the need for geographical proximity and co-localization of actors by introducing professional mobility and temporary geographical proximity. We also emphasize the ability of big organizations to manage the presence in different areas of their units, whereas smaller ones are more constrained by fixed co-localizations, which are only needed for certain phases of their interactions. Finally, we raise the often neglected question of the negative effects of geographical proximity, which creates tensions between the actors who use limited support-goods and tends to damage the local relational network. However, these negative effects can be limited by integrating them within organizations or institutions, that is through a re-composed organized proximity enabling one to solve conflicts and launch processes of cooperation or negotiation within ad- hoc mechanisms.*

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101.   Barry, B., & Fulmer, I. S. (2004). The Medium and the Message: The Adaptive Use of Communication Media in Dyadic Influence. *Academy of Management Review*, *29*(2), 272–292. https://doi-org.scd-rproxy.u-strasbg.fr/10.5465/AMR.2004.12736093

*We articulate a dynamic theory of media adaptation in dyadic influence. We identify key underlying attributes of media and discuss **how individuals enact and regulate these features to use media adaptively within influence situations**. Our model and propositions account for (1) the ways that attributes of communication media affect how influence-seeking behavior is generated and perceived and (2) the strategic adaptations of media that parties to organization-based influence attempts make.*

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102.   Burgess, S. M. (2003). Within-country diversity: is it the key to South Africa's prosperity in a changing world? *International Journal of Advertising*, *22*(2), 157–182. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/02650487.2003.11072847

Adapted from Dr Burgess's inaugural lecture as Professor of Business Administration in Marketing. The twin themes are the importance for marketing of correctly understanding consumers and their differences, and the need for businesses to take emerging consumer markets (ECMs) more seriously than they often do, drawing on examples from South Africa. The conclusions have application in most parts of the world, in particular the idea that consumer segmentation should be based on social and economic identity, rather than on conventional stereotypes based on race or tribal nationality.

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103.   Bieber, M., Engelbart, D., Furuta, R., Hiltz, S. R., Noll, J., Preece, J., Stohr, E. A., Turoff, M., & Van de Walle, B. (2002). Toward Virtual Community Knowledge Evolution. *Journal of Management Information Systems*, *18*(4), 11–35. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/07421222.2002.11045707

This paper puts forth a vision and an architecture for a community knowledge evolution system. We propose ==augmenting a multimedia document repository (digital library)== with innovative knowledge evolution support, including computer-mediated communications, community process support, decision support, advanced hypermedia features, and conceptual knowledge structures. These tools, and the techniques developed around them, would enable members of a virtual community to learn from, contribute to, and collectively build upon the community's knowledge and improve many member tasks. The resulting Collaborative Knowledge Evolution Support System (CKESS) would provide an enhanced digital library infrastructure serving as an ever-evolving repository of the community's knowledge, which members would actively use in everyday tasks and regularly update.

104. Carlile, P. R. (2002). A Pragmatic View of Knowledge and Boundaries: Boundary Objects in New Product Development. *Organization Science*, *13*(4), 442–455. https://doi-org.scd-rproxy.u-strasbg.fr/10.1287/orsc.13.4.442.2953

This study explores the premise that knowledge in new product development proves both a barrier to and a source of innovation. **To understand the problematic nature of knowledge and the boundaries that result,** an ethnographic study was used to understand how knowledge is structured differently across the four primary functions that are dependent on each other in the creation and production of a high-volume product. A pragmatic view of "**knowledge in practice**" is developed, describing knowledge as localized, embedded, and invested within a function and how, when working across functions, consequences often arise that generate problematic knowledge boundaries. The use of a boundary object is then described as a means of representing, learning about, and transforming knowledge to resolve the consequences that exist at a given boundary. Finally, this pragmatic view of knowledge and boundaries is proposed as a framework to revisit the differentiation and integration of knowledge.

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105. Reade, C. (2001). Dual identification in multinational corporations: local managers and their psychological attachment to the subsidiary versus the global organization. *International Journal of Human Resource Management*, *12*(3), 405–424. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/09585190010026211

This article reports the results of an empirical case study conducted in ==India and Pakistan== on dual identification in a multinational corporation (MNC). It is often stated in the management literature that it is vital for MNC managerial employees worldwide to share the organization's core values and goals, that is, to identify with the organization as a global entity. The underlying assumption is that it is possible, not to mention desirable, for the MNC as a global entity to be the main identification focus for its managers worldwide. Yet there appears to be a general preference for identification with relatively small social units, such as what the MNC subsidiary represents. This study investigates, with the aid of social identity theory, the patterns and strength of employee identification with the local subsidiary versus the global organization. The study also examines whether the type of MNC subsidiary might have an effect on local/global patterns of employee identification. The results reveal that respondents exhibit dual identification, and generally identify more strongly with their subsidiary. The type of MNC subsidiary appears to have an effect on local/global patterns of identification.

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106. Swanson, E. B., & Ramiller, N. C. (1997). The Organizing Vision in Information Systems Innovation. *Organization Science*, *8*(5), 458–474. https://doi-org.scd-rproxy.u-strasbg.fr/10.1287/orsc.8.5.458

We offer a revised institutional view of how new technology for information systems (IS) comes to be applied and diffused among organizations. Previous research argues that early adoption of a technological innovation is based on local, rational organizational choice, while later adoption is institutionalized and taken for granted. We suggest that institutional processes are engaged from the beginning. Specifically, **a diverse interorganizational community creates and employs an organizing vision of an IS innovation** that is central to its early, as well as later, diffusion. This vision serves key functions in interpretation, legitimation, and the organization and mobilization of economic roles and exchanges. The development and influence of an organizing vision is determined by a variety of

institutional forces. Among these forces, the community's discourse serves as the developmental engine. Other factors--business commerce, the IS practitioners' world view, the motivating business problematic, the core technology, and material processes of adoption and diffusion--provide the discourse with its content, structure, motivation, and direction. Primary development of the organizing vision takes place during the innovation's earliest diffusion. The hesitant early majority among the prospective adopters relies on this development in its efforts to make sense of the innovation. Where the organizing vision remains underdeveloped after early adoption, later diffusion and institutionalization of the innovation is likely to be retarded.

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107.   Berry, M. (1995). Research and the Practice of Management: A French View. *Organization Science*, *6*(1), 104–116. https://doi-org.scd-rproxy.u-strasbg.fr/10.1287/orsc.6.1.104

*Researchers at the CRG (Management Research Center) carry out their work through "clinical studies" lasting from one to four years and generating in-depth observations or how organizations function. The observations are analyzed through systematic discussions: over a span of 20 years the CRG has carried out more than 100 clinical studies, debated in hundreds of internal meetings. These exchanges have made it possible to identify similarities and differences among **the management situations studied, and to build up a body of knowledge in the field.** Although the guiding principles behind this approach are rooted in the unique nature of the* French "Grandes Ecoles d'Ingenieurs", *the research results can be useful for stimulating fruitful discussion in the field as a whole.*

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108.   Grover, V., & Goslar, M. D. (1993). The Initiation, Adoption, and Implementation of Telecommunications Technologies in U.S. Organizations. *Journal of Management Information Systems*, *10*(1), 141–163. https://doi-org.scd-rproxy.u-strasbg.fr/10.1080/07421222.1993.11517994

*Despite the increasing pervasiveness of telecommunications technologies, very few studies have holistically attempted to examine their use in organizational contexts. This study approaches the use of these technologies from an innovation perspective. Literature on innovation is synthesized into a testable model and the results of a senior IS executive survey of 154 organizations is reported. **Factors that enable initiation, adoption, and implementation of a set of 15 distinct telecommunications technologies are examined.** Two factors in particular, environmental uncertainty and decentralization of decision making, show significant relationships with the usage of these technologies. The results provide useful insights into the usage of individual technologies and the contextual factors that enable diffusion of this important set of technologies in* U.S. organizations.

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TOTAL = 108

- 13 (before iPhone) = 97 > 43 relevant to subject

 >>> ADVERTISING / BRANDING / MARKETING / CRM / e-COMMERCE / USER BEHAVIOUR / CONSUMER & CUSTOMER / TECHNICAL (tools/software focus) / CLOUD COMPUTING / GENDER / RELIGION / EXPATRIATION / TRADING, TRANSPORT, HUMAN RESSOURCES, LOGISTICS, SPORT, GAMING & TRAVEL = OUT of CONSIDERATION
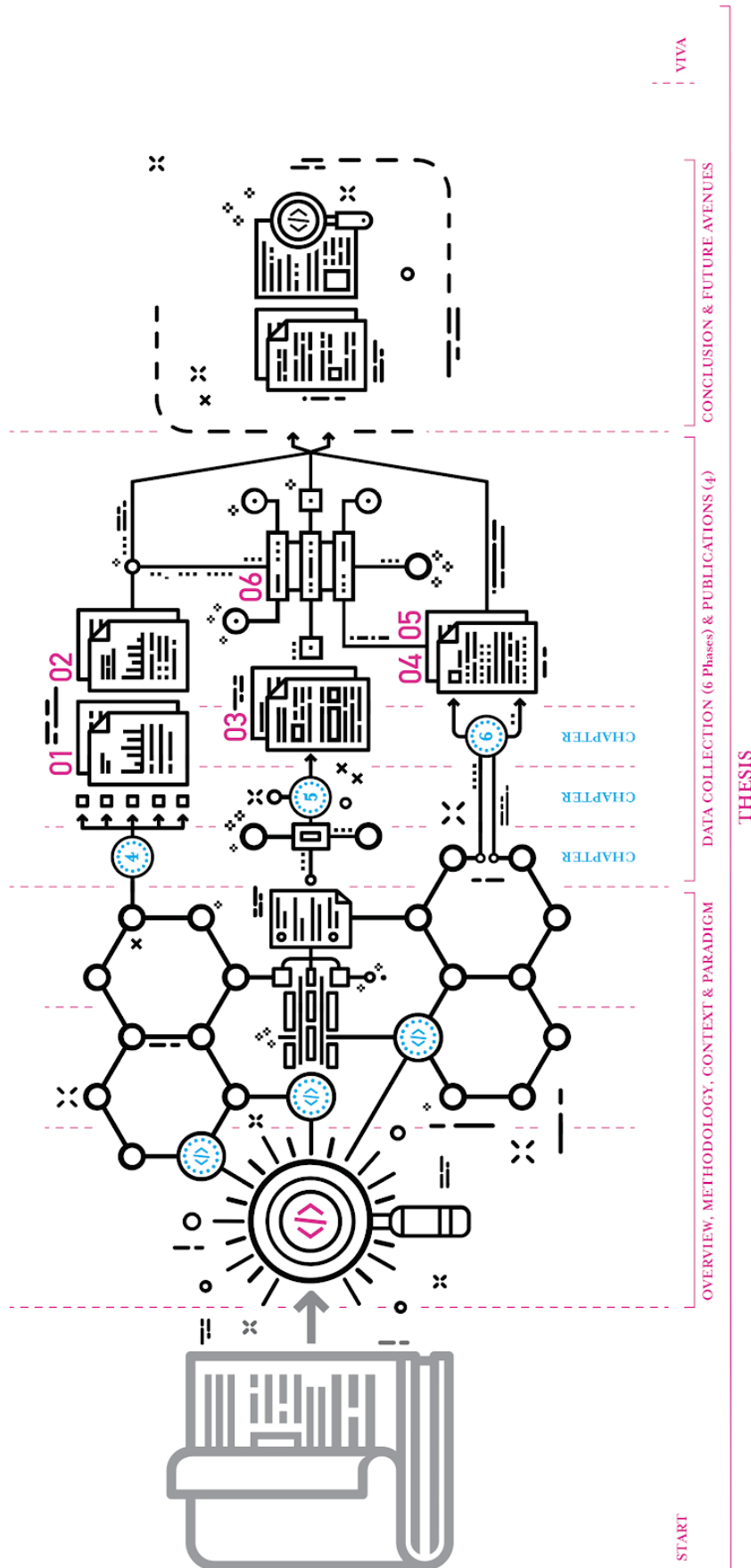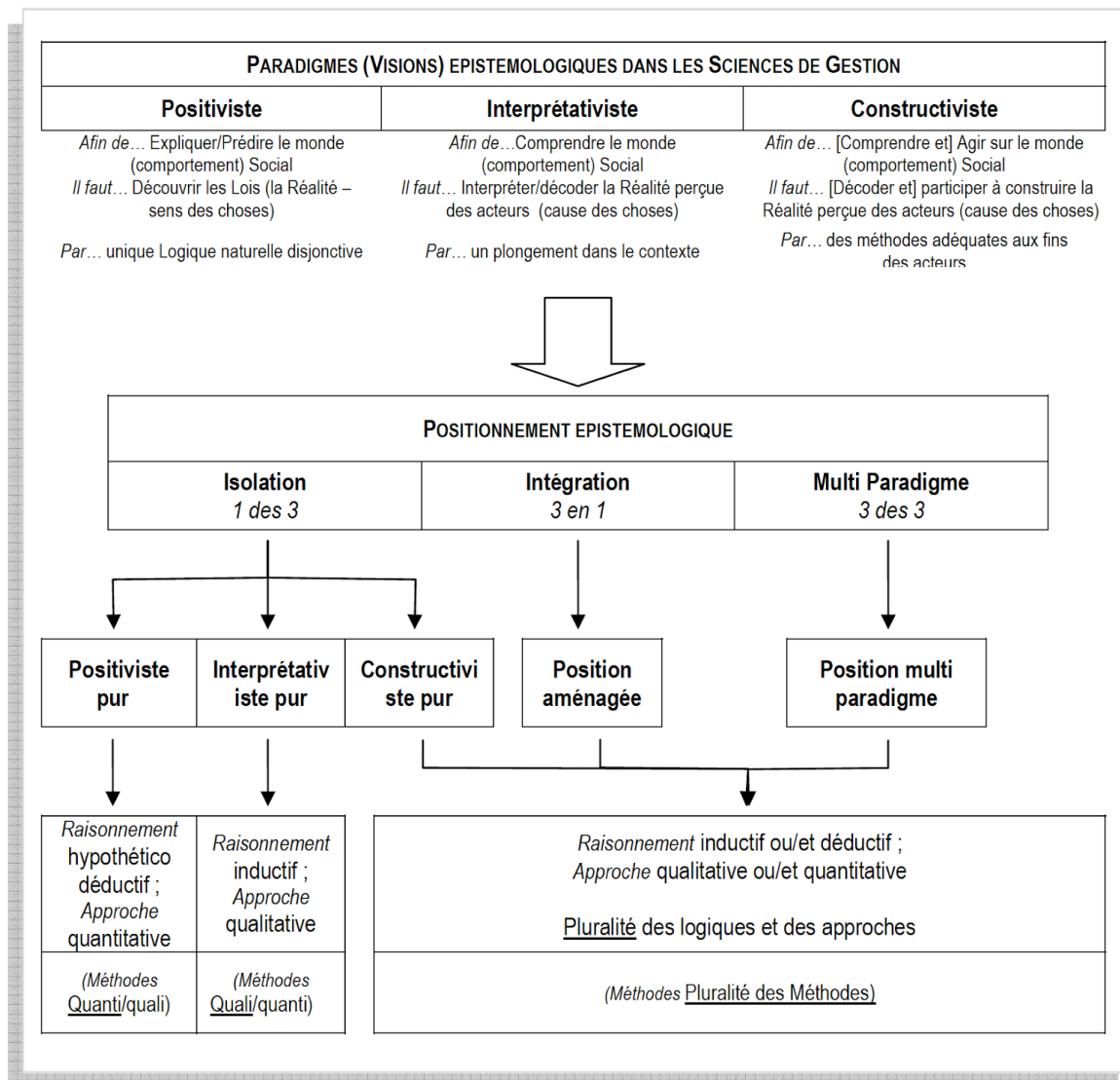
## Appendix 5 – Epistémologies et méthodologies de la recherche en Sciences de gestion. Note de synthèse

'Le Constructivisme est donc très populaire dans les Sciences de Gestion, - on l'apprécie pour son orientation finalité (pour reprendre Thiétart (2003), « L'attention est donnée au sens plus qu'à la méthode... »), sa flexibilité et l'esprit ouvert aux évolutions paradigmatiques et méthodiques (positivisme étant qualifié « sclérotique »), son caractère actif de l'agissement et le changement des choses, variété et triangulation des méthodes' (p. 25)

Figure 2. Les « Principes » de la Recherche - synthèse.

Velmuradova, M. (2004). *Epistémologie et Méthodologie de Recherche en Science de Gestion. Note de Synthèse.* pp.105. hal-01582285
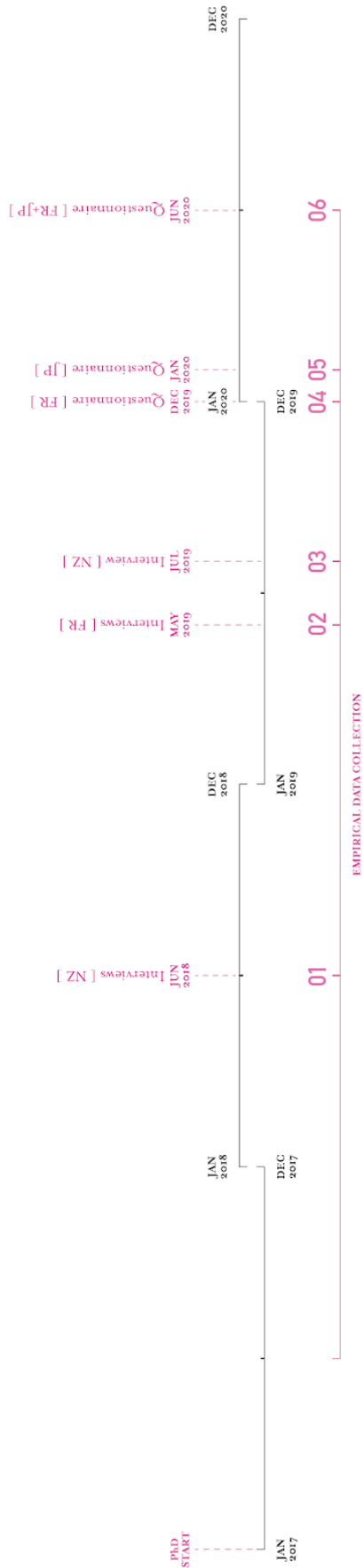
Appendix 7 – Summaries of the conversations

Participant A

The use of the laptop is more formal, and the use of mobile is more authentic.

A PC is always closed, and the smartphone is always open.

I can take my smartphone anywhere.

A typical workflow is when I take a picture, then quickly edit it, and then send it via Airdrop on my laptop, or synchronise it with my laptop and Adobe assets.

For me, what is important is pace and speed; also the whole process is simplified, easier.

It allows me to move from handmade sketches to digital files, and then to create a great alternative for storytelling or strategies AKA opportunities.

Mobile technology can facilitate ideation, archiving, time capturing, recording of memories and facilitating storytelling on the go.

It enhances communication and project management thanks to different software such as Slack, Trello, or Visual and also making video, which can be commented by text/messages, but also thanks to its camera: picture, quick editing, fast process. It is also a great resource to get references on the Internet. It allows 'digital whispers' via some apps, timekeeping and prototyping with the possibility to check progress at any time. A great medium for iterative work.

However, mobile technology can be distracting, especially via notifications (to switch off when with clients) which creates distraction and is rude (lack of politeness).

Mobile technology allows voice command also which is very convenient while driving, or cooking, for instance.

Mobile technology is more fluid for sharing versus task-based focus on a laptop, the mobile screen is also another environment within a space. Mobile is great for creative people, being able to constantly ideate, record thoughts.

I think more about what I'd say on my laptop, which is more formal or considered, and the mobile is more authentic.

Participant M

One smartphone and one tablet/PC

Mobile devices allow having a glimpse of 'what's going on' and to stay in tune with workload and/or urgencies. They are excellent tools for instant communication.

They fit in the hand and are always connected, compared to the desktop.

However, screen size can be frustrating, especially with long documents.

Mobile provides notifications, which allows you to stay alert, or aware, which is vital in some cases. They facilitate the organisation of priorities, time management, and processing information at a fast pace. It enhances multitasking or multi-functioning and immediacy.

However, it generates 'information obesity' and could make the process of priority curation more tricky, sometimes, especially if people cannot clearly differentiate their professional life from their personal life.

Better than fragmenting, mobile devices foster nimble and, therefore, business reactivity, especially in keeping an eye on the e-reputation.

Mark business developed the product 'mobile first' however, the Jira process doesn't allow mobile use.

Mobile pictures are essentially used for cooking, recipes, in terms of guidance for users, people. Great visual support for instructions.

In terms of restaurants, people searching on their phones are more likely to act. The conversion rate is up to 80% (US stats - year TBC)

While in a meeting, it is important to keep a mobile etiquette: no answering, no distractions, except emergency. Likewise after working hours: to be able to switch off, to get a mental break: "in the way we used to close our office doors.".

Communication via mobile texts/messages is abrupt, short, lack of consideration sometimes.

It is a different mindset, a different headspace than sitting down and taking the time, even to go back to the original message.

Participant T

Mobile devices are good to quickly sketch, identify links between ideas, to visualise ideas. It is more powerful.

Smartphones allow us to capture serendipity easily via photo or video because we always have it.

Geo-tagging is important to give a sense of authenticity to the shared information and can be a proof of activity. However, the Android system is far more intrusive than Apple's one.

In terms of Education, mobile technology allows links between formal and informal learning environments; informal being more authentic.

Since mobile devices are in our pockets, we've got a constant colocation awareness, and wearable devices are the future although quite limited for now.

In terms of time, people need to be aware of professional versus personal and able to stay alert, aware of the boundaries. Mobile devices are good to bridge time zones and different communities across the Internet. However, there is a mobile etiquette to keep in mind, such as silent mode due to excessive notifications sometimes.

One of the key advantages is the AAA (Anything Anywhere Anytime), the other one being to work in more relevant surroundings to enhance creativity, such as cafés, which allows people to change their perspective.

The major inconvenience is to keep all the devices charged, and the social impact (zombie mode, etiquette) and addiction. Screen size could be an issue for people with glasses.

In terms of workflow: ideation is done on mobile, then contextualisation/writing about it/typing is done on a desktop device, then editing or touch up can be done while commuting on a

mobile, then cloud-based dissemination can be done via mobile-first tools, such as Twitter.

Mobile devices for your work are useful because they allow you to work in different spaces, at different times, but you've got a strict understanding of work hours, however, you allow yourself to receive information on the go, and you stay alert, or aware, of what's going on, without necessarily engaging with anything.

I'm trying to rationalise with different ways of thinking and to go out of a normal cycle 9 am to 5 pm, and the "I need to have an idea on the spot" here, and I need to work on it there.

So, if we look at the same time and space aspect arguing that the tool is bringing new things but it's not so much important it's the whole thinking process around it, an adaptation.

Mobile implies different thinking, otherwise, replication makes life harder on a small version of a desktop device. Mobile devices and tools induce a faster record and production of ideas and sketches.

To keep in mind, some misconstrue the real intention to share, to co-create, to collaborate and self-promotion, vanity effect.

Mobiles allow a good transition between places and inspiration.

Participant V

A lot of devices for different functions.

Prefered ones: iPad Pro (for the pen), Apple Watch (for the data/fitness, notifications) & iPhone X

The mobile phone is an ideal tracker, which helps to record not only the idea itself but also its environment, surroundings. Substitute of memory sometimes but mainly an excellent tool to "free up my mind".

Mobile allows us to be mobile, 3A (Anyplace, Anywhere, Anytime), which implies a different environment, which enhances creativity (different perspectives).

Sit + think vs on-the-go + create

Mobile, thanks to their camera allows photos, or video, which prompt memories.

Specific spaces can foster ideas.

Tweet = good way to record, archive ideas + to share with people.

Note, sketches and audio are easy to make with mobile also.

PROCESS:

Ideation (mobile) > archive (cloud) > more details, typing, context (desktop) > feedback (mobile)

IDEA (mobile) > GROWTH (desktop) > FINALISATION (both)

- trigger
- background research
- sketch
- context / scoping
- sharing via network (no feedback usually)
- blogging

Mobile support "filling the gap" during community (time/space), more convenient, more discreet than laptops.

Mobile pros = flexibility with time / space + geo-tagging (memory trigger) + picture/video/360 (environment support)

Mobile cons = typing + screen size sometimes + addiction (to use properly) + blurring personal/professional limits + information obesity (flow in vs flow out)

Mobile = good to externalise info/date, to get some headspace

Mobile = memory, formalising process + clearing the mind

Mobile is like meditation > spiritual approach

Mobile = freedom + openness + not bound (to a physical/psychological environment)

"So, from being open, we changed our lives to being closed inside a space. I think now mobile devices are actually taking us back to the start (...)."

Participant C

Un ordinateur portable fait-il parti de la catégorie "mobile" ?

Le smartphone se met dans la poche (mobilité physique) et possède des qualités : géolocalisation, gyroscope, accéléromètre. Google Maps est important et unique sur smartphone. Il permet de monitorer mes mails et y répondre, si besoin, en déplacement (transport en commun / commute + connexion constante) afin de ne pas perdre le fil. Premier usage = téléphone / être joignable n'importe où et n'importe quand.

Mes outils mobiles ne sont pas des outils de création, ce sont des outils de consultation, de simulation 'in-situ' (conditions vraies). Le mobile me permet la consultation et la validation de certains design que je fais par rapport à la technologie ou aux usages du consommateur/client. Le smartphone me sert essentiellement la production et pour la validation technique de certains contenus ou certaines idées. Concernant les idées, j'écris beaucoup et j'utilise Notes ce qui me permet d'avoir absolument tout synchronisé sur mes différents terminaux mobiles en même temps et d'avoir toujours tout disponible.

C'est pratique pour les communications instantanées grâce au système de notifications, et pouvoir savoir que la personne est en ligne à ce moment là (réduire le phénomène 'ping-pong'). Curieusement pas de notifications sur PC mais mobile = OK car l'interface/l'usage est plus naturel/moins intrusif.

Dans mon terminal mobile principal, j'ai une sorte de portefeuille crypté (e-vault) qui me permet de stocker tous mes mots de passe de sites Internet, accès ftp, ssh etc... pratique en cas d'urgence, ou d'intervention impromptu à distance (bug fix).

Le smartphone me sollicite constamment et m'incite à avoir des comportements différents par rapport au PC : zapping effréné (volatilité). "C'est de garder un oeil sur son existence numérique." et d'avoir des interactions qui sont rapides qui sont légères (emails courts) et informel (abréviation, niveau de langage) sous condition que ce soit explicite dans la signature.

"Sa qualité et son inconvénient c'est de se rendre indispensable en fait ." (notion de AWATAD)

"C'est un objet qui nécessite qu'on s'en occupe." (batterie) et qui cré un rapport affectif, dérangeant parfois.

Question communication, je m'adapte aux habitudes de communication de mes clients qui, en général, ne sont pas tellement des cracks en informatique/technologie. Je n'ai pas un gros usage des réseaux sociaux qui me servent épisodiquement à garder un peu le contact avec des gens qui sont très loin.

Ma tablette est aussi un espace de consultation, surtout utile pendant les voyages (films, passer du temps) mais son usage est moins important que le smartphone. Le mobile est plus une extension de mon outil principal : l'ordinateur.

Participant L

J'ai un laptop, j'ai un macbook, un iPhone.

Le smartphone est très important pour moi et il me permet de travail vite.

J'utilise certaines applications (Universe, GIF, Instagram...) dont certaines de leur fonctionnalités sont uniquement disponibles sur mobile, à défaut beaucoup plus rapides.

Je suis une grande utilisatrice du mobile : "plus le smartphone évolue, plus je me détache du laptop".

La gratuité des applications est intéressante et le caractère "mobile" du smartphone me permet de travailler "on the go" (médecin, transports, hors bureau...). Il est toujours allumé aussi, donc disponible ce qui favorise/soutien ma productivité (notion AWATAD). Il ne prend pas de place (pratique), il m'apporte "tellement de potentiel créatifs".

Les points négatifs sont la charge (temps, manque de facilité) et le côté addictif. Cela me fait mal aux yeux certains jours, si je passe trop de temps sur l'écran du mobile (moins sur ordinateur).

Le smartphone me permet plus d'efficacité notamment dans la gestion des réseaux sociaux, et la gestion de projet (débuter des tâches sur le moment), réponse immédiate à des demandes de service, la gestion des emails (95% du temps).

Le smartphone me permet de rester à jour avec les informations/requêtes/projet et me sert de source d'inspiration via la consommation régulière d'images ce qui contribue, inconsciemment, à ma créativité. Il me permet de gérer/d'épanouir mes besoins de pluridisciplinarité.

Le mobile me sert d'outil pédagogique (enseignement du français) avec une panoplie de médias (texte, audio, vidéo, tous) ; et me permet d'utiliser facilement des outils différents pour des groupes différents (Messenger/WhatsApp/Hangouts).

Malgré le côté spontané/instantané des communications, je ne me sens pas obligée d'y répondre tout de suite. Je fais attention aux notifications et les éteins si besoin (chronophage).

Le smartphone me procure un plaisir visuel : par la qualité des images, l'immersion dans l'écran (proximité), la désactivation des notifications (mais actives sur ordinateur) et l'interface épurée (pas de clavier) et ergonomiques (yeux et doigts au même endroit). Cela me procure une dimension tactile aussi. (notion de CX > UI/UX)

Participant N

Un téléphone portable.

Il me sert à prendre des notes surtout, et gérer mon agenda.

En fait, je n'aime pas trop les smartphones et perds souvent mes affaires dont mon téléphone.

Le travail et la vie privée sont très liés de nos jours.

Je n'aime pas être joignable/connectée tout le temps (notion de dépendance).

Mes notes sont écrites et/ou audio (chanson & théâtre).

Le smartphone me permet d'enregistrer mes idées tout de suite, sinon je risque de les oublier.

En plus des paroles, cela permet de garder la mélodie, l'intonation.

Cela permet d'apprendre un texte de théâtre et de peaufiner la réplique, être autonome.

C'est mobile donc pratique et permet de faire plusieurs choses en parallèle, ou dans différents endroits (exemple du livre audio).

Le smartphone a un caractère intime : sa perte peut créer une tristesse (perte d'information, de contacts). Il permet de m'orienter (GPS) aussi donc sa perte est pénible mais bien aussi afin d'éviter trop de dépendance, ou de connectivité. Il y a un certain affect avec cet objet.

Il permet le multi-tâche (exemple de la réunion et du triage d'email tout en écoutant) et nécessite d'être consulté souvent (vacances / backlog d'emails).

Cela peut engendrer des problèmes de communication entre personnes ou génération via les SMS, le lingo propre à certains groupes/personnes.

Il me permet de créer : de l'idéation (feedback de l'entourage) à la pré-production (différentes versions) jusqu'à la dissémination (lecture chanson finale). Parfois le feedback de l'entourage n'est pas favorable donc l'idée est éliminée, n'aboutit pas. Processus authentique.

Au théâtre, le smartphone permet de s'entendre soi-même et donne un retour sur la réplique.

Il y a un problème d'étiquette avec le smartphone, beaucoup de gens l'ont toujours, notamment à table, au travail, dans le bus. Cela me fait peur.

Participant H

One iPhone and an iPad.

Mobile supports establishing and maintaining relationships and kind of connecting the dots between people across their different passions and niches and projects.

I use and share video/photo/text and project management apps to connect with people, and people amongst themselves. A smartphone is less intrusive and feels more casual than a camera, for instance. I feel enabled by mobile technology and I never examined all the processes before: the creative side of my work is inherent to the device (affordance). It has taken a lot of anxiety out of workflow because the steps are so simple. I just don't have that sense of plotting this massive 'to do' list, it just feels so much more spontaneous even though it's very thoughtful and deliberate: there's a lightness of touch, a sense of energy, and almost play as well.

There's not really a clear delineation between work and play but maybe that's not such a bad thing. I feel like it's a positive thing to be able to put my sense of play into my work. I don't have 'push notification', I can see them, they're just visually it's not intruding on my experience. I just like the illusion of some agency that I can't decide when to do it. The expectation from others that you will be able to respond to things quickly is a negative part of the smartphone. Another one is about how much time I should invoice: if I'm following up on a message or is this just secondary to the work and that doesn't count (grey area). I find that kind of challenging as a contractor or freelancer. Another negative is that sometimes gives me a false sense of achievement by quickly doing something without in-depth sometimes.

Within my day I alternate between tasks on a phone or a computer due to specific needs or requirements. Amongst all the tools that I use, WhatsApp is problematic for work: it has that function where you can see when someone was last online and there's often a lot of snarky talk about "well they've been online but they haven't replied. On that WhatsApp group, it feels like I am 'LARPing' my job. I am playing the part of the good worker [LARP]. It can put a lot of pressure on me in real life when meeting with people.

Twitter and a few mobiles that I am using are making my work easier: their app has more functionality/features than the desktop version.

I am not comfortable with people's expectations and what they think of me when I'm using my phone (looking anti-social): I still feel like it has a stigma. Therefore, sometimes I will still take handwritten notes and then put them on to Notes. For my writing, I use voice memos and I can kind of talk my way to the idea.

Also, I'm a bit of a digital hoarder, I feel even though it's digital it still feels like a weight. It feels like I'm taking up space. Besides, I use connected devices (mobile, camera), tablets, I guess it's getting around that laziness thing like I don't have to plug it in somewhere and I don't have to. It's just so easy, I just do it straight away.

Mobile is important for me and it helps me to do different tasks and it's a rich-media with different options photography, video, text, sound (voice and audio). And it is easy to use, it's always connected, it's simplifying certain processes of exchange of information. This could be problematic sometimes because information between people can be professional or personal and sometimes the line is blurry, especially from my experience using specific apps like WhatsApp might even increase the blurriness... because it's a mainstream/popular app compared to a Google Classroom or Slack, which are designed for professional people. And one of the core things about the smartphone is that everything is in one and it's far less intrusive, so more friendly for what I do because it has a lot of social encounters and I am after authenticity.

Face to face is so much more tangential. Things happen that you can't predict. Whereas I find that in an online meeting (Zoom), it feels just like you have to follow the agenda a little bit more... even if this is like a tiny leg and people talk over each other for a second it's kind of awkward, whereas if it happens in real life it's kind of funny. It just feels like face to face is more room for things that you couldn't have predicted. F2F has immediacy and more relational attributes.

I'm struggling, at the moment, with that's related to this really great use of mobile technologies: I've become kind of almost like a professional connector like it's my job to connect people's ideas, projects, places, and I kind of feel like now I've almost positioned myself as: the 'facilitator' or the 'one who connects other people's ideas'. It comes down to how quick and responsive I can be using online communication tools. So, for someone that is quite a people pleaser, I can please my own desire to please other people very easily and that leads me to be just this constant connector and not always making the time for my own projects. It's a negative aspect of mobile technology: connectivity and the expectation of being connected 24/7.

Appendix 8 – From Concepts to Attributes

1st order [CONCEPTS]	2nd order [THEMES]	Aggregation [ATTRIBUTES]	
It's so fast, it's so much in real-time...	QUICK DECISION-MAKING		[BOOST]
You know you can just see them glancing at notifications. Now we've got this (Apple Watch) so you can be more subtle.			
Yeah, so I can be in one meeting and quickly respond to another thing and not block the developer.			
Being nimble, being able to respond, moving forward quickly, is vital.		IMMEDIACY	
The plus, I suppose, is just being able to be connected, anywhere, anytime	EASY*		
Something that you have in your pocket all the time, so, it's with you constantly.			
I think, for me, the whole thing about mobile is, you know, ideas strike you (...) at that point, if you feel the ideas is good you need to note it somewhere, because regardless how good the memorie is, you'll forget it.			
Yes, keeping in touch with people who might be delayed, joining...		UBIQUITY	
I think the other thing that's easier is also just, with a smartphone, as the size, the fact it's in your pocket; the ability to sort of capture serendipitous events, that you'll never be able to capture with a laptop, or desktop			
The conversation is different on mobile, it's more fluid...	AUTHENTICITY		
So, it's about being able to link the formal and the informal educational environments, and be able to bring the informal, or authentic learning activities into the formal environment.			
I think more about what I'd say on my laptop, which is more formal, or considered, and the mobile is more authentic.		INTERACTIVITY	
Yeah, I guess, it's cause a lot of the communities I work with are global, and so they can be at any time of the day, because, you know, they're on a different time zone, it's where mobile devices are very useful as being able to bridge time zones.			
I think what mobile technologies give you freedom, they provide you openness, they actually enable you to work outside the four walls of a space.	GLOCAL NETWORK		
Public because that's another avenue of getting some feedback from someone else who is interested or with similar ideas.			
It's the content creation, which is so much easier on a mobile device. So, photos and videos, the ability to link to geographic context on the mobile device is easier, just because of the GPS which is built-in...			
I think it's also... it's part of your network. The way I have created many networks, I follow people who I think I'll be able to learn from, not necessarily collaborate with.		CONTEXTUALITY	
So, I was doing lots of digital whispers to my team to try and encourage them to come to the end of the workshop	COLLECTIVE INNOVATION		
So it's about collaboration, connecting people, and being able to use those in a team environment (...) so you end up collaborating with a group of people who are willing.			
If I think the idea is good, I might actually just could be tweeting about it. So that's building in collaboration, or whoever is interested in my network			
I think in terms of wider use of mobile devices in social media and all that they come, I think there is still a huge gap, in terms of the knowledge we have, and I don't think we share enough, that individuals don't share enough.			
I suppose a social impact is where it becomes rude: when you answer your phone, when you talking with other people, rather than ignoring it.	ETIQUETTE	ADDICTION	[BLOCK]
I think it's it's important to just step back in minutes, at that time, when you're using those mobile devices.			
Yeah, so you need to put ground rules around the use of the devices, and at different times a day I use them differently. So, during work hours, it's for work trying, you know, and the evening it's more a social use of it.			
The biggest negative is the social impact (...) I see a lot of people walking down the street, looking at their phone, and texting...		INFOBESITY	
What I have settled on, at the moment, is that I try to keep away from my phone when I'm spending time with my family.			
Because the mobile devices are so involved, is part of who you are, I think that sometimes you actually get too involved in...		HYPERCONNECTIVITY	
Actually friends, my nephews, you see, my brother, my boyfriend, they're always there with a phone...	PRIVACY		
Well, I think it's really terrible. At the table, I even have people answering their phone when you're with them.			

Based on Nag & Gioia's (2012) approach.

[Full-scale version: please scan the QR code with your mobile device, or check https://bit.ly/3i5giFl]
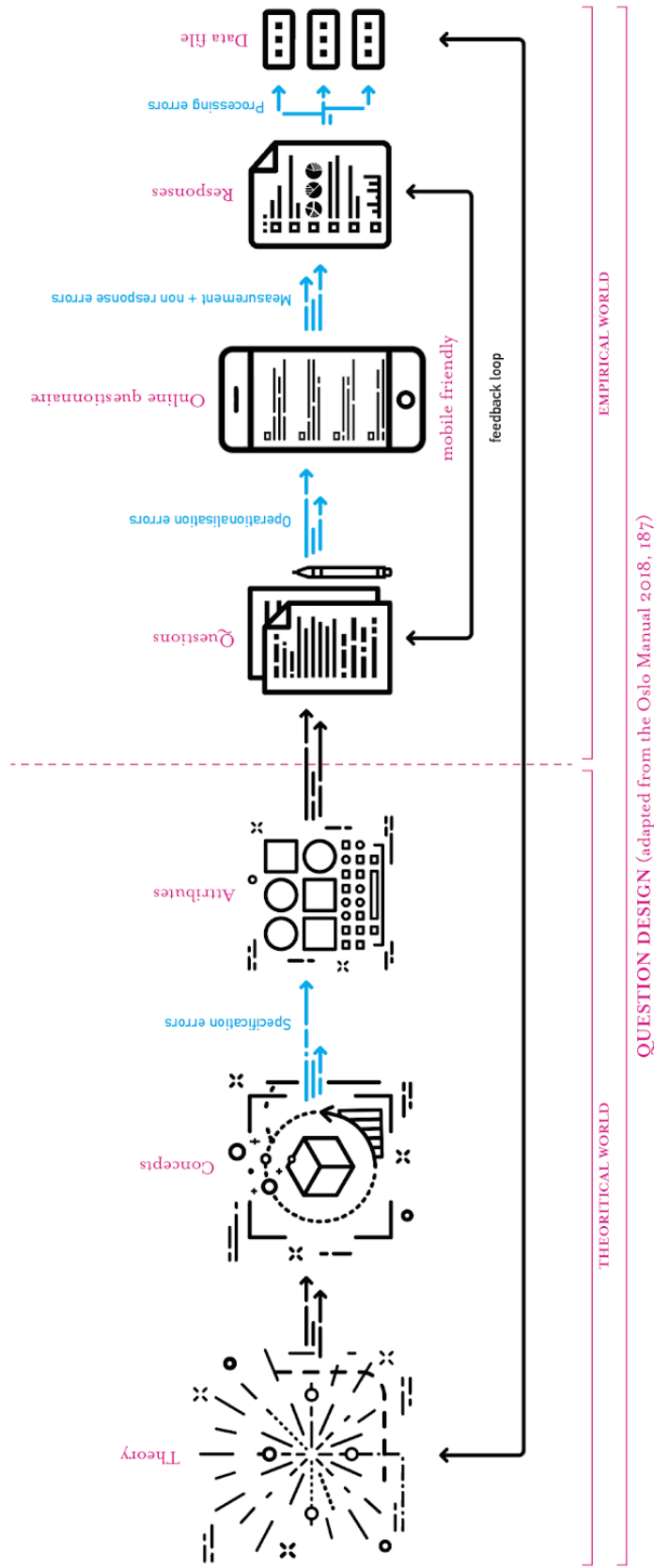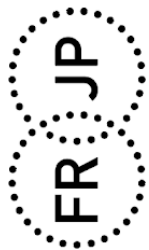
QUESTION DESIGN (adapted from the Oslo Manual 2018, 187)

Scaling-up collaborative practices through mobile technology

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Abstract— The beginning of the 21st century is experiencing the advent of smart technologies, which are redefining a new space and time. Consequently, we are more and more witnessing emerging companies, which have partially dematerialised and deterritorialised their knowledge, and where collaboration happens in a "space in-between".

This paper proposes to examine digital technologies, more specifically mobile technology with regards to the reorganisation of work and innovation in creative industries. The aim of this paper is to shed light on Nonaka and Konno's concept of *ba* (1998) in relation to the new digital paradigm. Our key intention is to investigate how can mobile technology foster a co-creative space between people and processes.

Using a broad literature, and a qualitative approach, we will examine how mobile technology, beyond just being a tool, enables a freshened consideration of the concept of *ba*, a new form of organisation of creative work.

Keywords—Co-creation, creativity, innovation, mobile technology, organisation

I. INTRODUCTION

The beginning of the 21st century is experiencing the advent of smart technologies, within particular a rapid development of the following three parameters: velocity, scope, and impact systems [1][2]. These qualities and changes lead us to a paradigm shift in terms of Economy and Society where 'disruption' is the buzzword and, from an innovation centred on producers [3], is increasingly focussing on an innovation centred on users [4] [5] and/or on collaborations [6]. Furthermore, the embedded new technologies and their practices are redefining a collaborative way amongst people across new spaces and time through connectivity and exchange of "intangible resources" [7] [8]. Consequently, we are more and more witnessing emerging and/or international companies, which have partially dematerialised and deterritorialised their knowledge [9] [10], and where a reorganisation of work happens in a "space in-between", either in a physical way [11] [12], either in a digital/online way [13] [14] [15], or both, and beyond standardised and organised processes within a new continuance [16] [17].

This paper proposes to examine digital technologies, more specifically mobile technology with regards to the reorganisation of work and innovation in creative industries. The aim of this paper is to shed light on Nonaka and Konno's concept of *ba* in relation to the new digital paradigm and its collaborative practices. *Ba* is a Japanese word that define a contextual space that is shared amongst people, and within which knowledge creation, sharing, transfer or evolution can take place. Our key intention is to investigate the following question: how can mobile technology foster a co-creative space between people and processes?

Using literature from mainly Knowledge Management (KM) and Information and Communication Technology (ICT), and a qualitative approach supported by four narratives, we will examine how mobile technology, beyond just being a tool, enables a freshen consideration of the concept of *ba*, a new form of working organisation and co-creation.

In the first section, we inspect the Knowledge Management (KM) and Information and Communication Technology (ICT) literature focussing on the notion of shared space, of ba, and mobile technology. Based on a qualitative approach [18] [19] supported by abductive reasoning, in the second part, we present some analysis and results from interpretations through four narratives. Accordingly, we discuss the findings of key elements and benefits of mobile technology with regards to new forms of organisation of creative work, a freshen consideration of the concept of *ba*. Then, we consider further avenues and potentials for future research. Finally, we conclude with our approach to mobile technology with respect to new spatiotemporal practices in organisations and collective innovation.

II. RELATION TO EXISTING THEORIES AND WORK

We first investigate some literature about the concept of *ba* [20] [21] [22. *Ba* is part of the SECI model, developed by Nonaka and Takeuchi, which consists of a cycle of four phases in terms of knowledge creation: Socialisation; Externalisation; Combination; and Internalisation. More precisely, [20] and [21], define four types of *ba*: *originating* (individual and face-to-face interactions –Socialisation) *ba*, *dialoguing* (collective and face-to-face interactions –Externalisation) *ba*, *cyber/systemic* (collective and virtual interactions – Combination) *ba*, and *exercising* (individual and virtual interactions –Internalisation) *ba* (Fig. 1).
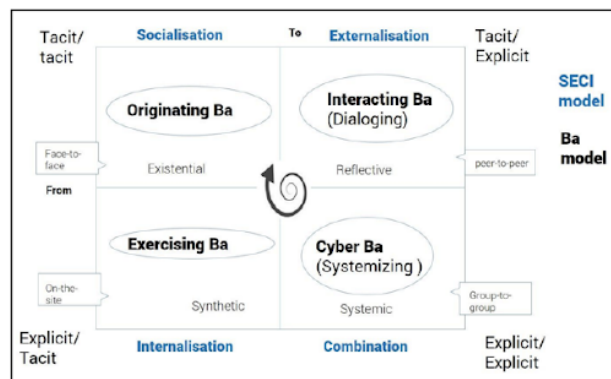

Fig. 1. The Ba and SECI model [20] presented by Buunk & Hall [15].

Therefore, *ba* provides a platform, a specific space, and is a foundation for knowledge creation, where the conversion of tacit to explicit knowledge, a 'justified true belief' (Ibid., 7), can occur. Also, within the SECI model, ICT is mainly contextualized within *cyber ba* (Combination), which can be considered as a place of self-reflective conversations in which new explicit knowledge is combined with existing knowledge [23].

Until recently, the extensive KM literature focussed on workers, framework, procedures, and technology with regards to the organisational knowledge with much emphasis on face-to-face (F2F) contacts and sharing, without taking much into account the globalisation trend, the new needs of international organisations, across multiple sites, time zones and cultures. Hereinafter, individuals, teams and/or organisations can benefit from *ba* if they manage to transcend their own perspectives or boundaries through it [24]. Based on the following definition [20][21]:

Originating ba *is the primary ba from which the knowledge-creation process begins and represents the socialization phase. Physical, face-to-face experiences are the key to conversion and transfer of tacit knowledge.* [20, p. 46]

And with regards to the emergence of new digital technologies such as the smartphone, we hypothesize that:

Hypothesis 1 (H1): in general, the original definition of the originating ba is not accurate anymore.

Indeed, scholars have identified the potentials of mobile technologies as an enabling technology which can generate substantial social benefits through 'ubiquitous and continuous connectivity' [25], or a mediating factor which facilitate spatio-social cohesions in teams and/or organisations [26] [14] by bridging boundaries in interdisciplinary collaborations [27]. As a matter of fact, [8] claim that thanks to the newly 'digital enhancements' ideas commingle more easily via social networks, either via specific dedicated platforms [15] [28], either through spontaneous initiatives [16]. Thus, people and/or experts are enabled to successfully exchange their tacit knowledge in the vicinity of online communication such as blogs [16], video-conferencing, or 'virtual community of practices (VCoP)' [23, p. 797], for instance. These enhancements allow the cross pollination of beliefs, thoughts, understandings, and co-creation such in F2F situation, in spite of the geographical distance between people.

Although some scholars [29] [30] argued that the concept of *ba* is unlikely to benefit any other culture except the Japanese's one, we argue that *ba*, within the 21st century, should be considered beyond physical or geographical borders, and within a convergent digital culture [31] [32]. Jenkins [33] even talk about 'spreadable media'. Hence, our second hypothesis is that:

Hypothesis 2 (H2): mobile social media no longer restrict the originating ba to be F2F only.

Furthermore, [28] identified that online, synchronous or asynchronous communication can provide strategic possibilities for workers' collaboration via social networks, or bundled e-mails, for instance, which is not possible in most common and daily F2F interactions. [14] refers to the empowerment of sharpened information and workflow optimisation for the knowledge-intensive organisations via new technologies. The exchange of tacit knowledge is no longer a requisite within a digital environment.

Whilst a lots of scholars, including Nonaka, prone the importance of 'being present', especially in terms of the *originating ba*, F2F exchange of tacit knowledge through various cues such as body language including the gaze, facial expression, hand-gestures and physical distance [34] [35] or even smell [36], Panahi et al. [13] demonstrated that tacit knowledge sharing is no longer the exclusivity of F2F. Correspondingly, [28] asserted that ICT, via Computer Mediated Communication (CMC), can well support F2F interactions, or even replaced them, if collaborators use a rich media (image, video, text, audio), if the rich media is easy to use, and if people meet on a regular basis.

Additionally, [37] highlighted that, within the various stage of the development of a project, ICT plays an important role as mediator, facilitator, gathering people towards a same 'headspace'. As a result, within the companies operational leadership changes [38], based on the original "Unfreeze – Change – Refreeze" [39], we conjecture the following:

Hypothesis 3 (H3): mobile technology, in its current development and state, enhances a "permanent slush".

It fosters the four *ba* (shared space) at any time, and it strengthens ongoing interaction (time, beyond time zones) amongst various protagonists, either insight a company only, either including outsiders also [14] [17] [15]. This particular co-creative space goes beyond its physical definition (i.e.: country, city, office), and F2F encounters.

In parallel, supported by Ahonen's definition [40] of the nine particular characteristics of a smartphone such as '*1. First Personal Mass Media; 2. Always Connected; 3. Always Carried; 4. Built-in Payment Channel; 5. Available at Creative Impulse; 6. Has Most Accurate Audience Info; 7. Captures Social Context of Consumption; 8. Enables Augmented Reality; 9. Offers Digital Interface (to the real world)*', we concur with [23] about the fact that, alike in F2F, intimacy and authenticity can be attained while using a smartphone, especially through various apps using rich media, including live-feed features, such as *WhatsApp*, *Monkey*, *Discord*, for instance. Another key characteristics of mobile technology lies into the fact that any single interaction, at any given time, is recorded and can be archived indefinitely [41], which enables people to easily search, tag, and comment upon an encounter [13]; while memory of F2F interactions can fail people, or remain concealed in their heads [42]. Wang [43] identified that video sharing is highly constituted of reflective statement about personal experiences. This aspect of archiving and retrieving knowledge is particularly interesting because, amongst the KM literature, there is an assumption that collaborators are working within a permanent co-presence [28], and that, within a F2F situation, people can understand cues, can read unspoken signs, automatically, or intuitively [13], or are not subject to cognitive biases or miscommunication neither. Hence, referring to the *originating ba* and tacit knowledge, context and business models play an important role in the pertinence and value, or not, of mobile technology in relation to knowledge sharing, knowledge transfer and knowledge management [44].

Within an online environment, socialisation can be challenging and, based on a large part of the KM literature, it should always involve a F2F element [45]. However, other scholars identified that, if trust, even a 'swift trust' [46] [13] can be reached, F2F contact is not necessarily required to provide the foundation of *originating ba*. Thus, mobile

devices allow new ways to organise, to work, to (re)(co)create linkages and to be able to engage with knowledge at every level. Due to their pervasive aspect, they also expands to intercultural competencies and communication skills as a mediator in their development [47]. Moreover, they allow to manage the socially distributed knowledge within a borderless territory, involving greater multidisciplinary collaboration and problem-oriented and consequently the co-creation of knowledge production [48] [21] [49]. Although there are some nuances between information and engagement, mobile technology can strongly nurtures collaborative nomadism [50], amongst a vast amount of collaborators and across a broaden spatial-temporal framework [51].

Therefore, mobile technology stimulates ubiquitous communication, and consolidate collective intelligence [52] [27] [53]. Hence, communication and productivity outside the workplace are enabled through exchange with colleagues via instant messaging, or video calls, for example. The socialisation and the transmission of the tacit knowledge advocated by Nonaka & Takeuchi can happen without F2F interactions while maintaining an different but authentic level of engagement with less 'social baggage' such as title, position, within a group setting, for example.

As a consequence, new work routines created by technological and digital productivity [54] shift organisational work [14][55] into a new space and time within a constantly changing international market and nature of work [37, p. 477]. Mobile technology is enabling innovative initiatives [25] through convergence and, to a certain extent, it contributes to a collective innovation, which is part of a process of a reticular and ecosystemic context that goes beyond the dyadic 'focal firm/innovation partners' [56], especially in the creative industries [2][7].

III. RESEARCH APPROACH

A. Methodology: grounding the frame of the research

Based on Eisenhardt's argument [18], which quantifies a minimum of four and an upper limit of ten case studies, only the preliminary investigation made in New Zealand/Aotearoa will be presented in this paper due to time constraint. Indeed, more narratives were undertook in France recently in order to develop more robust findings while dealing with a complex interpretation of data however the results are not finalised yet. Furthermore, despite the sparse literature with regards to mobile technology in relation to knowledge and/or organisational management, our approach develops a theory by using an inductive process which refers also to Yin' statement that case studies, like experiments, are generalisable to theoretical propositions [19, p. 21].

In order to strengthen our observations, this investigation uses abductive reasoning, which is defined as a non-linear process of thinking that goes back and between general theory and specific data, or phenomena [59]: in our case, the triangulation between the previous *Relation To Existing Theories And Work*, the current *Narratives* and some tacit knowledge based on nearly ten years' experience in mobile technology. It aspires at the creation of new knowledge by combining "something old and something hitherto unknown" [59]. After the interviews, and the feedback stage, the study focused mainly on ascertaining how the accumulated data was pertinent, or not, in order to identify a pattern, or recurring phenomena [60].

Finally, to support the analysis, an interpretivist perspective is used, following some traditional approach in management: organisational theorist Karl Weick [61] talked about actors, in any situation, as processing information and reacting to it. Other theorists have moved one step further by arguing that actors 'enact' their environments. In our particular case with a specific focus on the "space in-between", the new form of collaborative organisation (coworking spaces, fab labs, living labs, makers spaces, and a few more), we refer to the use of cross-case analysis and synthesis.

B. Narratives overview

The study takes place in Aotearoa/New Zealand, and participants were selected for their diversity: gender, age and sector of activity. Thus, we have samples for variance and we do not claim that our sample is representative, but rather enlightening some possibilities of bigger manifestations. Amongst the interviewees, there is one woman and three men, and the age group varies from 28 to 61 years old, which set the average age at 40 years-old. The designated sectors are: Telecommunication, Hospitality, and Education with one perspective from Humanities, and another one from Sciences. The choice of the sector was based on the size of the personified companies, such as one participant own a small company with less than 10 fixed-term employees, and the other three are employees within companies with more than 2,500, and less than 10,000, fixed-term staff members. Hence, one Small and Medium-sized Enterprise (SME) is represented amongst the participants. All of the interviewees are living and mainly working in Auckland, the economical capital of the country, while the political one is based in Wellington, however all of them are experienced travellers and have worked, or are working, overseas at some stage. They are all using one, or several, mobile devices, and have, or contribute to, a strategic role in their business, which means that they deal with decision-making, management and strategic thinking, involving a certain level of creativity, innovation. Also, noticeable, all businesses have an international portfolio but are more focused on the national market, in which they play an important role.

The presented narratives are composed of four face-to-face conversation/interviews, following a Talanoa's approach, which was audio-recorded via a mobile device and freely guided by six open questions. Talanoa is "a personal encounter where people story their issues, their realities and aspirations" [57], and seems the most appropriate Pacific's framework in Aotearoa/New Zealand. After the 'open conversations' (Talanoa), the collected data (field notes and audio recordings) were fully transcribed and analysed, then synthesised as narratives. Also, original recordings, full transcripts and syntheses were sent to their respective author for their perusal, and as a *koha* (Māori word roughly equivalent of *gift*) (Fig.2).

Besides, confidentiality and anonymity are ensured through the whole process: this is why names are not revealed, just the first letter of the participants' first name. Noteworthy for this article: two interviews took place outside of the participant's business office, in a *café* –we will come back to this point in the *Findings* section.

Additionally, an ongoing process of back and forth, from the collected data to the hypothesis, and from the "conflicting literature" and "similar literature" [58] took place to advance some connections between facts, to determine a pattern.
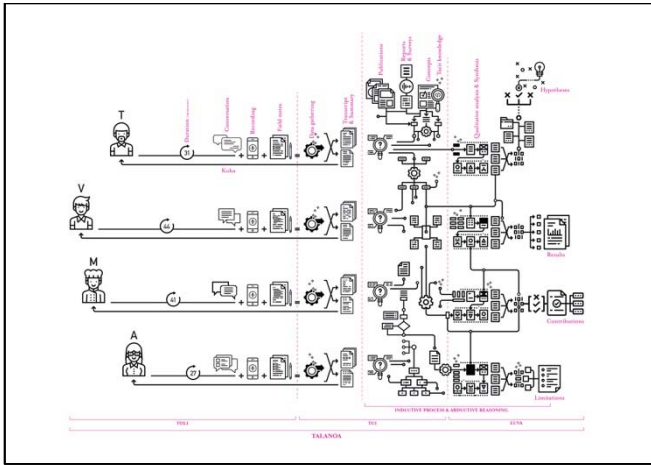
Fig. 2. Visualisation of the research design.

IV. FINDINGS

The empirical findings, detailed in the narratives and substantiated by the literature review, provided mindful support for a theoretical framework that explains how mobile devices contribute to the reorganisation of creative work. They emphasised six of the key mobile benefits defined by Ahonen [40], namely: mobile is the *First Personal Mass Media*, *Always Connected*, *Always Carried*, *Available at Creative Impulse*, *Enables Augmented Reality* (in our case: geolocalisation), and *Offers Digital Interface*.

Also, through the various responses, we were able to identify some of the patterns and mechanisms of mobile advantages: the most important one is that mobile devices allow people to work while commuting (some commute can go beyond the hour), and during any short timeframe, such as lunch break, meeting awaiting, or in the evening: "picking up a mobile device is easier than opening a laptop" (Participant T). Consequently that mobile technology keeps its users connected and aware of any new information, or knowledge exchange. Third, while these tasks are all possible with a laptop, all our informants repetitively stated that it is far easier with a device that can fit into their hand. One of the unexpected advantages is about mobiles' ability to geolocate information, which plays an important role in terms of giving a sense of authenticity to the shared, or recorded, information.

That's the way that I provide a trail of proof of my work activity to my boss because he follows me on Twitter. *Because, I'm so often in the office.* (Participant T)

Beyond some authenticity, related to the geolocalisation, transpires another unforeseen point, which is about memories triggering. Hence, mobile technology provides valuable support for recording physical and psychological activities in relation to a specific time-space nexus:

I can explain more further: it's like you can open up the camera, you can geotag something. So, if they... something that I'm doing is important, that space is important and I can geotag it. You can do quite a lot of things, like capture 360: that space is again the trigger for your idea, you can capture 360 pictures. (Participant V)

The photos are important to me cuz I had to do timesheets, so sometimes I'll actually go look at my photos, and go what was I was doing to know what was going on and also if I can't if I think back to when did I do that workshop I can go in here and then find all the notes. So, it's like an archiving and like a research gathering. (Participant A)

Incidentally, 'knowledge is context-specific, as it depends on a particular time and space' [21, p. 7]. And mobile technology can provide accurate information about the broader context via the metadata associated to any recording (text, picture, audio, video).

Throughout the various narrative delineated and our particular focus on new forms of organisation, we have identified that all participants felt empowered by mobile devices: they indirectly referred to the concept of the 3As (Anything Anywhere Anytime):

Mobile technology can facilitate ideation, archiving, time capturing, recording of memories and facilitating storytelling on the go. (Participant A)

And some of them particularly appreciated being able to work in more relevant surroundings to enhance their creativity, such as *cafés* or parks, which allows them to change their perspective, to get into another headspace. This point corroborates that 'the benefits for flexible working in which employees may spend significant amounts for time working from outside the office, whether at home or from public spaces like coffee shops.' [14, p. 247]. Mobile devices can also support the identification of the context-related knowledge within the *ba* through their flexible way of recording, sharing, in any surroundings. Therefore, it validates *H1 & H2*.

In general, we identified four beneficial attributes associated with mobile technologies: autonomy, diversity, openness, interactivity. Hence, these findings introduce a unique and novel perspective on Nonaka et al. [21] SECI model. To explain further, firstly 'autonomy', participants appreciate the 3As freedom that mobile devices can provide; its borderless and timeless way to socialise, to connect, to be part of a '*autopoietic system*' [21, p.26] that support the cycle of tacit-explicit knowledge transfer:

I suppose the key is in the title mobile. When you're not in an office, or somewhere else, it's very very convenient to handle something that is five inches by three inches… to fit in your hand, to work, to connect. (Participant M)

Secondly 'diversity', interviewees highlighted how it is engaging to use mobile devices with their unique profile, skills, and culture (headspace); its way to support reflexivity and, indirectly, enhancing the conversion of tacit knowledge into an explicit one:

So the mobility is in the cloud, mobility of my thinking, not per se, mobility of me, but my thinking. So, if I don't have things in that cloud, which I view is another form of mobility, what it means is, if I'm in that space again, to think a bit more, I'll just go to my phone with my own initial idea, and the things I've done purely on my memory. (Participant V)

Thirdly 'openness', mobile creates a kind of egalitarian space where everyone is on the same level, is using the same way to communicate while processing information at a fast pace, at any time, at any location; its way to seamlessly share information, or knowledge, beyond the top-down relations defined by Nonaka & Takeuchi/Konno:

I normally just try to keep it very simple. So, for me, it's about sharing an idea, the moment in time, not about how professional it looks. (Participant T)

Lastly 'interactivity', it certainly facilitates ongoing exchanges amongst participants and contributors, in an authentic and a 'polysynchronicity' way [14, p. 257]; its way to experiment without censorship, or self-restriction, alike a F2F interaction:

The conversation is different on mobile, it's more fluid… you discuss things, like on social media: I'm in a bridesmaids group, and we're just constantly chatting, or I've got a few design school, designy friends and we post things so it's more like a sharing conversation, whereas emailing and writing documents is more like this is that, task-based, maybe. (Participant A)

With time, the choice of an environment in relation to a piece of specific knowledge, within a defined period, can be crucial: it can enhance the (co)creation of new businesses thanks to the newly discovered knowledge-based approaches, new collaborations modes. However, the "vector of space, in contrast, has remained comparatively undertheorized" [14, p. 86], and this paper intends to highlight some new knowledge with regards to mobile technology and flexible and co-creative practices across time and space, beyond conventional, or expected, F2F interactions also.

A. A collaborative and innovative breadth

One clear indication of the argument that we are developing is that knowledge is not fixed to a particular site (sector, geographical locations, or network) and that mobile devices are fostering the move across various practices and actors, which increase the potential for innovative initiatives to emerge, for social interaction to occur more often [63] [21] [25]. Mobile technologies energise production of knowledge across multiple locations and moments, which supports the necessary dynamic flux required in a *ba*, a shared context for knowledge creation [20] [21], including its *Socialisation* stage.

Additionally, the empirical findings provide informed support for a theoretical framework that explains how mobile technology foster new ways of innovative collaborations, new forms of work organisation and production of knowledge. Through the narratives and qualitative analysis, we establish that mobile devices are productively contributing to working activities because they allow people to work in different spaces, at a different time. Despite, the blurring line between the professional sphere (formal environment) and the personal sphere (informal environment) people like to receive information on the go, to stay alert, or aware, of 'what's going on', without necessarily engaging with anything sometimes. Thus, it confirms *H3*.

Although Bratianu [24], referring to the SECI's model, argued that 'socialisation and combination are only processes' [21], we respond that mobile technology implies two levels of transformation: the first one being technological, by choosing the relevant rich media [28] [13] for the appropriate meaning or audience, the second one being psychological by carefully choosing the recipients or the channels [23]. Besides, whilst Capdevila [64, p. 5] argue that 'colocation and face-to-face interaction also strengthen community identity and facilitate peer-to-peer learning', we counterclaim that mobiles allow a good transition between places and inspiration, that mobile technology allows links between formal and informal learning environments, informal being more authentic. This particular point raises the question of the traditional workplace stereotypes and its organisation [61] [38], especially in terms

of top-down process [28] [29], and creative behaviour [65], which could be considered in further research.

B. Empowering individuals, communities and transdisciplinarity

Throughout the empirical and theoretical findings, we identified that mobile technology allows more fluidity for sharing ideas, quick notes, spontaneous thoughts in comparison to a task-based, more considered, focus on a laptop. Thus, they actively support *H1*, *H2* and *H3*, and contribute to a newly defined *ba*. Even if mobiles' screens can be a limitation, especially for long documents, for instance, it offers another environment within a location, a *ba* –a frame "made up of the borders of space and time" [20]. An idea can then be easily shared concisely, even "abruptly" (Participant M) via authentic and traceable means.

Hereby, it enhances the potentials for innovative practices, maintaining collaborative processes [66], and co-creating solutions [48] within a digital third-space, a mobile 'middle ground' [67], what we call a *ba mobile*. To a certain extent, this *ba mobile* resonates with Capdevila [12] definition of coworking space as being open, promoting co-creation and collaboration, including a community of practice and sharing, however while the *ba mobile* is primarily digital with possible physical components, the coworking space is primarily physical with some digital aspect; the first one has undefined or blurry financial constraints while the second one can be pressured by the need to commercialise. Said differently, referring to [12, p. 99], the *ba mobile* could be considered as a specific coworking space which focus on the upstream phases of ideation and conceptualisation.

In other respects, mobile provides information and notifications, which create a constant flow (*H3*)[10], sometimes within specific innovative trajectories [68, p.5], which allow users to stay alert, or aware, about "vital" pieces of information (Participant M), in some cases. They facilitate the organisation of priorities, time management, and processing information at a fast and steady pace [14], even a friendly adaptability, modularity and agility [53]. They enhance multitasking, or multi-functioning, versatility and immediacy, which facilitates the fluidity of exchanges [21, p.15], as required in *ba*. Thus, it enables a *hic et nunc, passim* (here and now, everywhere) quality. However, it can generate "information obesity" and could make the process of priority curation quite tricky sometimes, what Nonaka et al. defined as 'redundancy' [21, p. 27]; especially if people cannot clearly differentiate their professional life from their personal life. Nevertheless, if managed, this information overload (Participant T & M) is part of the paradoxical dynamic well defined in the SECI model [21, p. 29] as being the synergy between the different spaces of the organisation.

Overall, in congruence with the cited literature, our investigations clearly support the view that mobile devices enhance instant communication while involving multiple actors, including 'person-to-person' [15, p. 4], across eclectic locations, and, sometimes, various different time zone, although they require a specific set of skills, a 'balance' [14, p. 247], in terms of spatiotemporal management. To a certain extent, they could fit within the coworking space definition of Capdevila [12], with a strict focus on the early stage of the creative process and organisational work.

C. *A new way of co-creating*

Conjointly, mobile technology allows to have glimpses of what is happening now and to stay in tune with any workload and/or urgencies. Said differently, mobile devices enhance the possibilities of "getting the right information to the right person at the right time" [69, p. 409], which, beyond their functionality, involves a different mindset, requires more agility with regards of cognitive dynamics (Ibid.), as well as original and shared work routines and significant behavioural changes in communication practice [14].

Moreover, we argue that this prospect might be the key reason for the latest social connectivity construe, mainly based on trust, "face-to-face" engagement, social affix, group identification, discussions and storytelling, and co-creation via project-based incentives [70] [71] [14]. Hence, social and human practices such as information sharing, connectivity, flexibility and adaptability, continuous learning [6, p. 70], for instance, are merging to become one, instead of being considered as a "recursive continuum of mind-body-object practices in specific organisational settings".

Therefore, mobile technology, in order to be efficient, implies a shift of paradigm in terms of space engagement (Participant V & T), in term of *nimble* approach in comparison to fragmented (communication and knowledge) of organisation (*H3*)[14]. Beyond Japanese or Western culture, mobile technology, thanks to its easiness to use organisational, participatory, informative or communicative tools such as social media [15] imply a new digital culture which enhances fluid (Participant A) and seamless exchanges [50] of tacit and explicit knowledge beyond F2F encounters (*H2*), as described in the original *originating ba*.

To sum up, drawing on the cited empirical and theoretical findings, mobile devices, because of their attributes and advantages, increase the probability of creative outcomes, whereas social interactions, and/or faster and authentic communication exchanges, and/or nimble organisation. To an extent, due to their affordances, they democratise collaboration, interaction and ongoing operations in organisations within a new spatial and temporal dimension. Hence, the *ba mobile* challenges new form of work organisation and foster the creation of another dimension, of a new kind of 'enabler space' [53] thanks to 'enabling technology' [25] (Fig. 3).
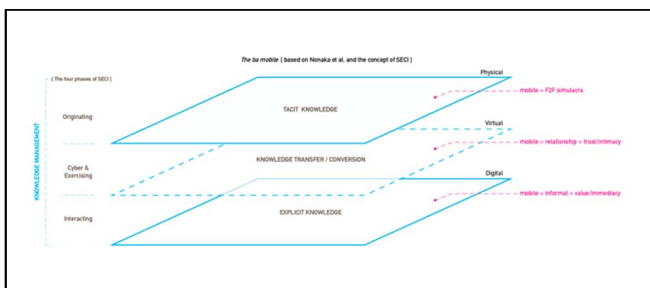

Fig. 3. How mobile technology can foster a co-creative space between people and processes.

Based on these findings, we also advance that, thanks to mobile technology, we are experiencing a paradigm shift in terms of 'space & time' characterised by four trends: physical space (mobility), *phygital* space (social networks), digital space (Internet, clouds), and invisible space (5G, 4G, 3G, WIFI, to name a few in relation to connectivity). The ongoing digital transformations are more than moving from one technology to another, it requires two principal elements: a societal and cultural shift (borderless and timeless interactions) and a start-up mentality (different headspace, different spatial-organisational mindset) [25].

V. CONCLUSION

This paper makes three contributions. First, using literature from both KM and ICT, and a qualitative approach supported by four narratives, we examine how mobile technology enhances a new and digital form of *ba*, providing an equivalent of F2F interaction within the *Socialisation* phase (originating *ba*). Beyond just being a tool, mobile devices are facilitating co-creative practices amongst individuals, amongst eclectic spaces and time in conformity with the SECI model [21]. More specifically, mobile technology enables quick decision-making in spite of users locations, it enhances creativity by allowing people to work from any surroundings or environment, and it can support activities' recording via geolocating information, for example. Thus, mobile technology enhances 'knowledge-sharing benefits of communication visibility by closing the gap between metaknowledge and situated practice' [14, p. 254].

Second, based on the four attributes (autonomy, diversity, openness, interactivity) that we identified, this investigation contributes to new understandings of social and innovative practices that mobile technology fosters through a third-space, a mobile 'middle ground' [67]: between local and global (*glocal*), between national and international (borderless, ubiquity), and between F2F and online (*phygital*). Hence, it provides a freshen consideration of the concept of *ba*: the *ba mobile*, which foster a new kind of 'enabler space' [53] thanks to 'enabling technology' [25]. Consequently, in conformity with our hypotheses (*H1, H2, H3*) and practice-based trends, mobile technology can be considered as a mutation actor, which implies a paradigm shift in organisational work.

Third, this paper addresses some potential directions for deeper explorations in terms of different target groups, markets, sectors, geopolitical environments, even in terms of comparative analysis within the space of innovation's brokers. Yet, it might be interesting to collect further details and/or information via a quantitative approach to find out more parameters in order to develop more path models [49], and to triangulate the new findings with further qualitative data, for instance; as well as to investigate further about how, in a swift and shifting digital world, mobile technology thrive productivity, workers' performance.

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Mobile technology*, work and people

Anonymous survey [15 questions] | Laurent Antonczak [PhD]

*smartphone, phablets, tablets only (no laptop)

◯ = only one choice
☐ = multiple choice possible

1. 1A. HOW OLD ARE YOU?

   Mark only one oval.

   ◯ 18
   ◯ 19
   ◯ 20
   ◯ 21
   ◯ 22
   ◯ 23
   ◯ 24
   ◯ 25
   ◯ 26
   ◯ 27
   ◯ 28
   ◯ Other: _____

2. 1B. DO YOU CONSIDER YOURSELF AS...

   Mark only one oval.

   ◯ female
   ◯ male
   ◯ Other: _____

3.   2. PLEASE PRECISE YOUR COUNTRY...

Mark only one oval.

◯ France

◯ Japan

◯ Other: _____

4.   3. WHAT KIND OF WORKER ARE YOU?

Check all that apply.

☐ sedentary (office desk)
☐ occasional mobile (mainly office desk and 'more' such as hot desk, café...)
☐ independent hypermobile (mainly 'more' than desk office)
☐ hyperagile (wherever)
Other: ☐ _____

5.   4. HOW DO YOU CONSIDER YOURSELF?

Check all that apply.

☐ sedentary alone
☐ sedentary and nomad
☐ sedentary and teleworker
☐ nomad alone
☐ teleworker alone
☐ nomad and teleworker
☐ all of them
☐ none of them
Other: ☐ _____

6.   > and/or define a ratio (i.e.: x% sedentary, y% nomad, z% teleworker)

_____

7.   5. WHERE DO YOU WORK? (At least once a week)

Check all that apply.

- ☐ from home
- ☐ outdoor work (construction site, market...)
- ☐ from free access professional areas
- ☐ from a paid coworking space
- ☐ from a hotel

Other: ☐ _____

8.   6. WHERE DO YOU WORK? (At least once a month)

Check all that apply.

- ☐ from home
- ☐ outdoor work (construction site, market...)
- ☐ from free access professional areas
- ☐ from a paid coworking space
- ☐ from a hotel

Other: ☐ _____

9.   7. WHEN DO YOU WORK?

Check all that apply.

- ☐ at the usual times (office hours)
- ☐ in the evening (at least once a week)
- ☐ weekends & holidays
- ☐ sick leave
- ☐ when necessary

Other: ☐ _____

10. **8. WITH WHOM DO YOU WORK?**

Check all that apply.

- [ ] colleagues from the same department only
- [ ] colleagues from the same group, company, or branch only
- [ ] colleagues in the same industry only
- [ ] colleagues across different industries but in the same field/area (sales, marketing, management...)
- [ ] anyone
- [ ] no-one (solo only)

Other: [ ] _____

11. **9. HOW DO YOU WORK WITH YOUR MOBILE? (daily pattern)**

Check all that apply.

- [ ] phone calls
- [ ] emails
- [ ] shared agenda
- [ ] videoconferencing

Other: [ ] _____

12. **10. WHAT REMOTE TOOLS DO YOU USE WITH YOUR MOBILE?**

Check all that apply.

- [ ] corporate network (hierarchy, colleagues, customers...)
- [ ] online document sharing
- [ ] social networks
- [ ] web conferencing

Other: [ ] _____

13. **11. WHEN WORKING FROM YOUR MOBILE, DO YOU CONSIDER YOUR WORK TO BE?**

Check all that apply.

- ☐ perfect
- ☐ very good
- ☐ good
- ☐ average
- ☐ rough
- ☐ bad

Other: ☐ _____

14. **12. WHEN CREATING SOMETHING, DO YOU USE YOUR MOBILE DURING...**

Check all that apply.

- ☐ the preparation phase (ideation, setting up collaborators/teams...)
- ☐ the incubation phase (idea associations, brainstorming, exchange of feelings with collaborators/teams...)
- ☐ the idea generation phase (mind-mapping, curation process...)
- ☐ the production phase (execution, interpretation of the idea...)
- ☐ the evaluation phase (feedback, reviews, user-tester comments...)

Other: ☐ _____

15. **13. WHAT IS MORE IMPORTANT FOR YOU IN TERMS OF AGILITY?**

Mark only one oval.

◯ = to be ranked by preference order (1 = very important / 6 = not important)

16. **> temporal agility/time (desynchronisation, multitasking, immediacy...)**

Mark only one oval.

	1	2	3	4	5	6
	◯	◯	◯	◯	◯	◯

17. > spatial agility/environment (seat partition, home, elsewhere...)

Mark only one oval.

	1	2	3	4	5	6
	◯	◯	◯	◯	◯	◯

18. > digital agility/technology (mobilisation of tools, applications, bring your own device...)

Mark only one oval.

	1	2	3	4	5	6
	◯	◯	◯	◯	◯	◯

19. > relational agility/social (network contacts, colleagues, hierarchy, customers...)

Mark only one oval.

	1	2	3	4	5	6
	◯	◯	◯	◯	◯	◯

20. > empowerment/independance (autonomy, do it yourself, bricolage...)

Mark only one oval.

	1	2	3	4	5	6
	◯	◯	◯	◯	◯	◯

21. > other (to precise below)

Mark only one oval.

	1	2	3	4	5	6
	⬭	⬭	⬭	⬭	⬭	⬭

22. (please precise here)

_____

23. 14. WHAT DOES MOBILE WORK REVEALS FOR YOU?

Mark only one oval.

⬭ = to be ranked by preference order (1 = very important / 5 = not important)

24. > an empowerment of practices

Mark only one oval.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

25. > some confusion of the boundaries between work and non-work

Mark only one oval.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

26. > a general agility of practices thanks to digital technology

Mark only one oval.

	1	2	3	4	5
	◯	◯	◯	◯	◯

27. > a social opportunity to share and learn

Mark only one oval.

	1	2	3	4	5
	◯	◯	◯	◯	◯

28. > other (to precise below)

Mark only one oval.

	1	2	3	4	5
	◯	◯	◯	◯	◯

29. (please precise here)

_____

30. 15. WHAT KIND OF OPPORTUNITIES DOES THE MOBILE OFFER TO WORK?

Mark only one oval.

◯ = to be ranked by preference order (1 = very important / 5 = not important)

278

31. > for the individual (personal development, learning opportunity, economy...)

Mark only one oval.

	1	2	3	4	5
	◯	◯	◯	◯	◯

32. > for the worker (quality of life, sociability, economy...)

Mark only one oval.

	1	2	3	4	5
	◯	◯	◯	◯	◯

33. > for the company (productivity, economy...)

Mark only one oval.

	1	2	3	4	5
	◯	◯	◯	◯	◯

34. > for the community (environment, transport, territorial balance, economy...)

Mark only one oval.

	1	2	3	4	5
	◯	◯	◯	◯	◯

35. > other (to precise below)

Mark only one oval.

	1	2	3	4	5
	⬭	⬭	⬭	⬭	⬭

36. (please precise here)

_____

Skip to section 2 ([THANK YOU + MERCI] 👍 🤪)

[THANK YOU + MERCI] 👍🤪

4. HOW DO YOU CONSIDER YOURSELF?
14 responses

Category	Count
sedentary alone	2 (14.3%)
sedentary and nomad	8 (57.1%)
sedentary and teleworker	3 (21.4%)
nomad alone	1 (7.1%)
teleworker alone	1 (7.1%)
nomad and teleworker	0 (0%)
all of them	2 (14.3%)
none of them	1 (7.1%)
Teleworker and sedentary	1 (7.1%)
internships	1 (7.1%)

4. HOW DO YOU CONSIDER YOURSELF?
23 responses

Category	Count
sedentary alone	1 (4.3%)
sedentary and nomad	11 (47.8%)
sedentary and teleworker	5 (21.7%)
nomad alone	0 (0%)
teleworker alone	1 (4.3%)
nomad and teleworker	6 (26.1%)
all of them	2 (8.7%)
none of them	1 (4.3%)

> and/or define a ratio (i.e.: x% sedentary, y% nomad, z% teleworker)
9 responses

60% sedentary, 40% nomad

70% sedentary, 10% nomad, 20% teleworker

40-20-40

30% each...

70% sedentary, 30% nomad

40% telework 60% sedentary

80% sedentary 20% nomad

internship 100%

60% sendentary 40% nomad

> and/or define a ratio (i.e.: x% sedentary, y% nomad, z% teleworker)
21 responses

5. WHERE DO YOU WORK? (At least once a week)
14 responses

Category	Count
from home	11 (78.6%)
outdoor work (construction site, market...	3 (21.4%)
from free access professional areas	6 (42.9%)
from a paid coworking space	2 (14.3%)
from a hotel	0 (0%)
University	2 (14.3%)
school	1 (7.1%)
At school	1 (7.1%)
At school	1 (7.1%)

5. WHERE DO YOU WORK? (At least once a week)
23 responses

Category	Count
from home	13 (56.5%)
outdoor work (construction site, market...	5 (21.7%)
from free access professional areas	10 (43.5%)
from a paid coworking space	6 (26.1%)
from a hotel	1 (4.3%)
At school	1 (4.3%)

6. WHERE DO YOU WORK? (At least once a month)
14 responses

Category	Count
from home	8 (57.1%)
from free access professional areas	5 (35.7%)
	7 (50%)
from a hotel	1 (7.1%)
school	1 (7.1%)
Café	1 (7.1%)
Unemployee	1 (7.1%)
at school	1 (7.1%)
At school	1 (7.1%)

6. WHERE DO YOU WORK? (At least once a month)
23 responses

Category	Count
from home	12 (52.2%)
outdoor work (construction site, market...	3 (13%)
from free access professional areas	13 (56.5%)
from a paid coworking space	7 (30.4%)
from a hotel	1 (4.3%)
At school	1 (4.3%)

7. WHEN DO YOU WORK?
14 responses

Category	Count
at the usual times (office hours)	12 (85.7%)
in the evening (at least once a week)	8 (57.1%)
weekends & holidays	8 (57.1%)
sick leave	0 (0%)
when necessary	4 (28.6%)

7. WHEN DO YOU WORK?
23 responses

Category	Count
at the usual times (office hours)	14 (60.9%)
in the evening (at least once a week)	12 (52.2%)
weekends & holidays	8 (34.8%)
sick leave	0 (0%)
when necessary	11 (47.8%)

8. WITH WHOM DO YOU WORK?
14 responses

Category	Count
colleagues from the same department only	8 (57.1%)
colleagues from the same group, company...	1 (7.1%)
colleagues in the same industry only	1 (7.1%)
colleagues across different industries ...	1 (7.1%)
anyone	5 (35.7%)
no-one (solo only)	5 (35.7%)

8. WITH WHOM DO YOU WORK?
23 responses

Category	Count
colleagues from the same department only	7 (30.4%)
colleagues from the same group, company...	5 (21.7%)
colleagues in the same industry only	1 (4.3%)
colleagues across different industries ...	11 (47.8%)
anyone	3 (13%)
no-one (solo only)	3 (13%)

281

9. HOW DO YOU WORK WITH YOUR MOBILE? (daily pattern)
14 responses

- phone calls — 9 (64.3%)
- emails — 14 (100%)
- shared agenda — 7 (50%)
- videoconferencing — 4 (28.6%)

9. HOW DO YOU WORK WITH YOUR MOBILE? (daily pattern)
23 responses

- phone calls — 21 (91.3%)
- emails — 22 (95.7%)
- shared agenda — 15 (65.2%)
- videoconferencing — 6 (26.1%)
- Social medias — 2 (8.7%)

10. WHAT REMOTE TOOLS DO YOU USE WITH YOUR MOBILE?
14 responses

- corporate network (hierarchy, colleague... — 4 (28.6%)
- online document sharing — 14 (100%)
- social networks — 12 (85.7%)
- web conferencing — 3 (21.4%)

10. WHAT REMOTE TOOLS DO YOU USE WITH YOUR MOBILE?
23 responses

- corporate network (hierarchy, colleague... — 9 (39.1%)
- online document sharing — 13 (56.5%)
- social networks — 21 (91.3%)
- web conferencing — 4 (17.4%)

11. WHEN WORKING FROM YOUR MOBILE, DO YOU CONSIDER YOUR WORK TO BE?
14 responses

- perfect — 0 (0%)
- very good — 2 (14.3%)
- good — 6 (42.9%)
- average — 6 (42.9%)
- rough — 2 (14.3%)
- bad — 1 (7.1%)

11. WHEN WORKING FROM YOUR MOBILE, DO YOU CONSIDER YOUR WORK TO BE?
23 responses

- perfect — 3 (13%)
- very good — 8 (34.8%)
- good — 10 (43.5%)
- average — 7 (30.4%)
- rough — 0 (0%)
- bad — 0 (0%)

12. WHEN CREATING SOMETHING, DO YOU USE YOUR MOBILE DURING...
14 responses

- the preparation phase (ideation, settin... — 10 (71.4%)
- the incubation phase (idea associations... — 7 (50%)
- the idea generation phase (mind-mapping... — 7 (50%)
- the production phase (execution, interp... — 4 (28.6%)
- the evaluation phase (feedback, reviews... — 9 (64.3%)

12. WHEN CREATING SOMETHING, DO YOU USE YOUR MOBILE DURING...
22 responses

- the preparation phase (ideation, settin... — 15 (68.2%)
- the incubation phase (idea associations... — 14 (63.6%)
- the idea generation phase (mind-mapping... — 8 (36.4%)
- the production phase (execution, interp... — 4 (18.2%)
- the evaluation phase (feedback, reviews... — 11 (50%)

13. WHAT IS MORE IMPORTANT FOR YOU IN TERMS OF AGILITY?
5 responses

● = to be ranked by preference order (1 = very important / 6 = not important)

100%
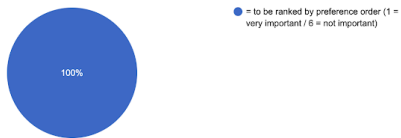
13. WHAT IS MORE IMPORTANT FOR YOU IN TERMS OF AGILITY?
4 responses

● = to be ranked by preference order (1 = very important / 6 = not important)

100%
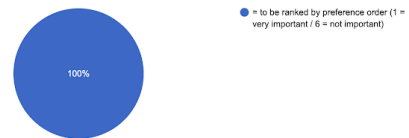
> temporal agility/time (desynchronisation, multitasking, immediacy...)
14 responses

- 1 — 2 (14.3%)
- 2 — 2 (14.3%)
- 3 — 2 (14.3%)
- 4 — 5 (35.7%)
- 5 — 3 (21.4%)
- 6 — 0 (0%)
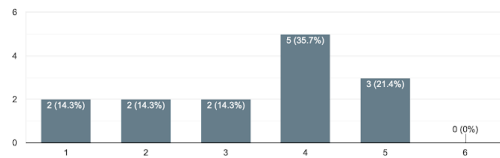
> temporal agility/time (desynchronisation, multitasking, immediacy...)
23 responses

- 1 — 2 (8.7%)
- 2 — 7 (30.4%)
- 3 — 1 (4.3%)
- 4 — 1 (4.3%)
- 5 — 3 (13%)
- 6 — 9 (39.1%)

282
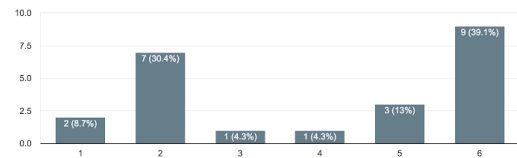
> spatial agility/environment (seat partition, home, elsewhere...)
14 responses
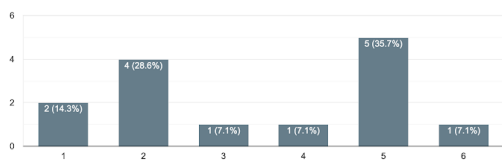
> spatial agility/environment (seat partition, home, elsewhere...)
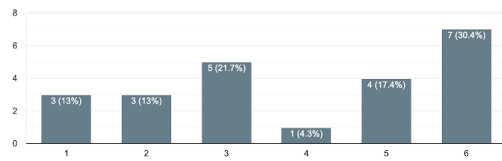23 responses
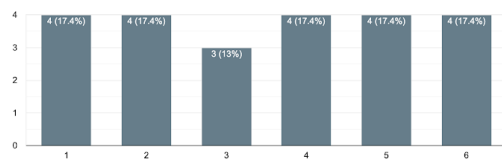
> digital agility/technology (mobilisation of tools, applications, bring your own device...)
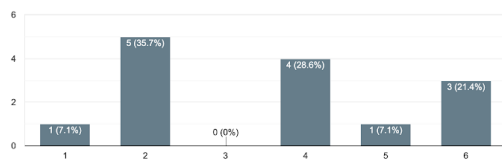14 responses
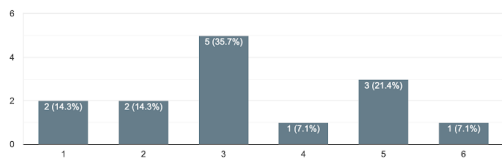
> digital agility/technology (mobilisation of tools, applications, bring your own device...)
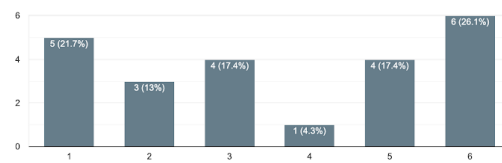23 responses

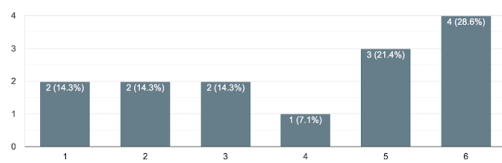## > relational agility/social (network contacts, colleagues, hierarchy, customers...)
14 responses

> relational agility/social (network contacts, colleagues, hierarchy, customers...)
23 responses

> empowerment/independance (autonomy, do it yourself, bricolage...)
14 responses

> empowerment/independance (autonomy, do it yourself, bricolage...)
23 responses
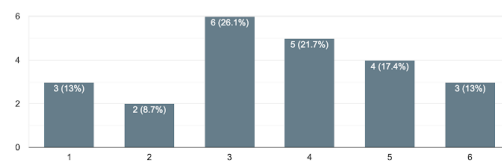
> other (to precise below)
3 responses
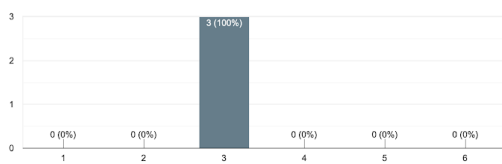
> other (to precise below)
4 responses
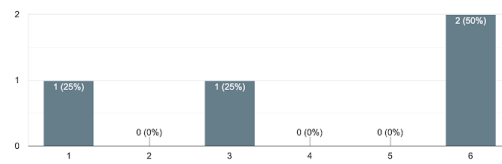
(please precise here)
1 response

Self independence

(please precise here)
4 responses
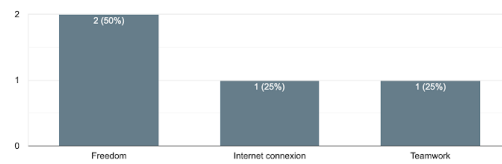
14. WHAT DOES MOBILE WORK REVEALS FOR YOU?
1 response

● = to be ranked by preference order (1 = very important / 5 = not important)

283

14. WHAT DOES MOBILE WORK REVEALS FOR YOU?

1 response

= to be ranked by preference order (1 = very important / 5 = not important)

100%
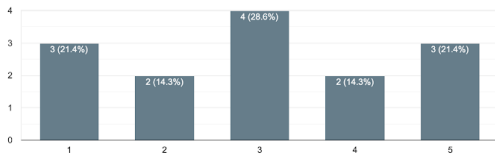
= to be ranked by preference order (1 = very important / 5 = not important)

100%

> an empowerment of practices
14 responses
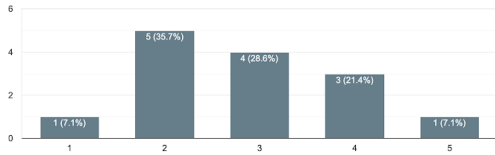
- 1 (7.1%)
- 5 (35.7%)
- 4 (28.6%)
- 3 (21.4%)
- 1 (7.1%)

> an empowerment of practices
23 responses

- 2 (8.7%)
- 5 (21.7%)
- 5 (21.7%)
- 5 (21.7%)
- 6 (26.1%)
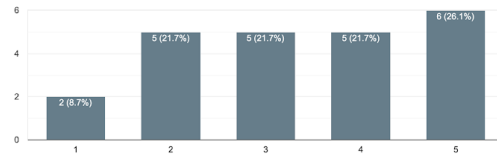
> some confusion of the boundaries between work and non-work
14 responses

- 3 (21.4%)
- 2 (14.3%)
- 4 (28.6%)
- 2 (14.3%)
- 3 (21.4%)

> some confusion of the boundaries between work and non-work
23 responses

- 2 (8.7%)
- 1 (4.3%)
- 7 (30.4%)
- 7 (30.4%)
- 6 (26.1%)
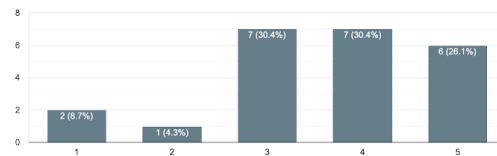
> a general agility of practices thanks to digital technology
14 responses

- 2 (14.3%)
- 4 (28.6%)
- 3 (21.4%)
- 3 (21.4%)
- 2 (14.3%)
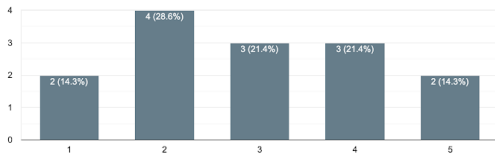
> a general agility of practices thanks to digital technology
23 responses

- 2 (8.7%)
- 7 (30.4%)
- 2 (8.7%)
- 3 (13%)
- 9 (39.1%)
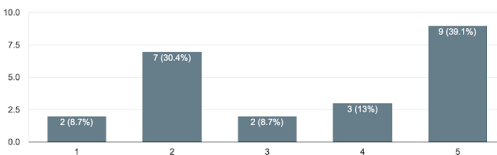
> a social opportunity to share and learn
14 responses

- 5 (35.7%)
- 1 (7.1%)
- 1 (7.1%)
- 3 (21.4%)
- 4 (28.6%)
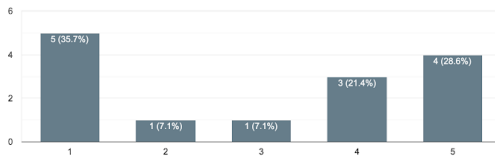
> a social opportunity to share and learn
23 responses
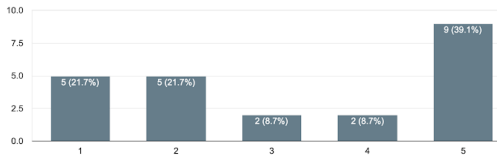
- 5 (21.7%)
- 5 (21.7%)
- 2 (8.7%)
- 2 (8.7%)
- 9 (39.1%)

> other (to precise below)
0 responses

No responses yet for this question.

> other (to precise below)
7 responses

- 0 (0%)
- 2 (28.6%)
- 1 (14.3%)
- 1 (14.3%)
- 3 (42.9%)

(please precise here)
0 responses

No responses yet for this question.
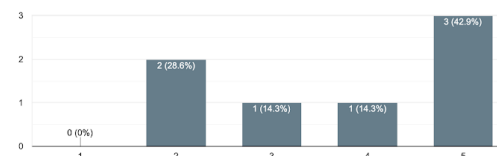
15. WHAT KIND OF OPPORTUNITIES DOES THE MOBILE OFFER TO WORK?
1 response

> other (to precise below)
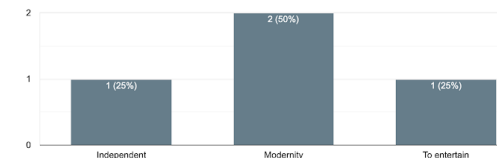0 responses

No responses yet for this question.

(please precise here)
0 responses

No responses yet for this question.

(please precise here)
4 responses

- Independent 1 (25%)
- Modernity 2 (50%)
- To entertain 1 (25%)

15. WHAT KIND OF OPPORTUNITIES DOES THE MOBILE OFFER TO WORK?

1 response

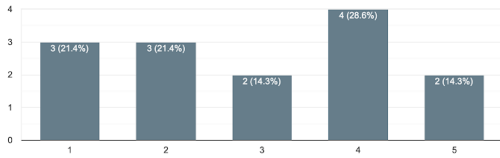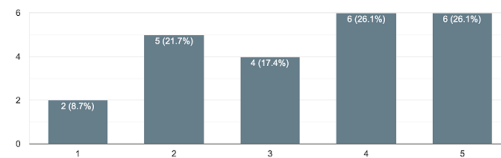● = to be ranked by preference order (1 = very important / 5 = not important)

100%

● = to be ranked by preference order (1 = very important / 5 = not important)

100%

> for the individual (personal development, learning opportunity, economy...)
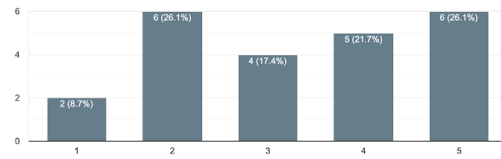
14 responses

- 1 — 3 (21.4%)
- 2 — 3 (21.4%)
- 3 — 2 (14.3%)
- 4 — 4 (28.6%)
- 5 — 2 (14.3%)

> for the individual (personal development, learning opportunity, economy...)

23 responses

- 1 — 2 (8.7%)
- 2 — 5 (21.7%)
- 3 — 4 (17.4%)
- 4 — 6 (26.1%)
- 5 — 6 (26.1%)

> for the worker (quality of life, sociability, economy...)

14 responses
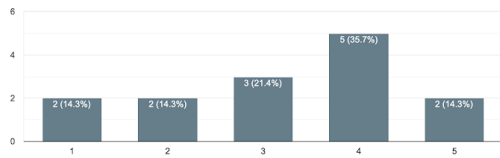
- 1 — 2 (14.3%)
- 2 — 2 (14.3%)
- 3 — 3 (21.4%)
- 4 — 5 (35.7%)
- 5 — 2 (14.3%)

> for the worker (quality of life, sociability, economy...)

23 responses

- 1 — 2 (8.7%)
- 2 — 6 (26.1%)
- 3 — 4 (17.4%)
- 4 — 5 (21.7%)
- 5 — 6 (26.1%)

> for the company (productivity, economy...)

14 responses
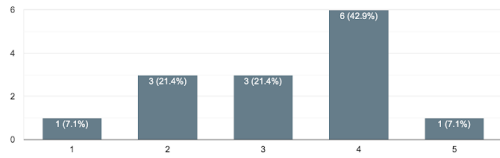
- 1 — 1 (7.1%)
- 2 — 3 (21.4%)
- 3 — 3 (21.4%)
- 4 — 6 (42.9%)
- 5 — 1 (7.1%)

> for the company (productivity, economy...)

23 responses

- 1 — 3 (13%)
- 2 — 6 (26.1%)
- 3 — 2 (8.7%)
- 4 — 9 (39.1%)
- 5 — 3 (13%)
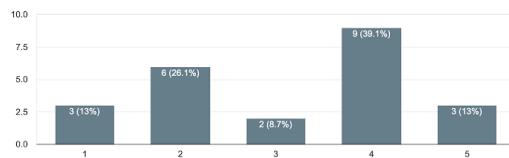
> for the community (environment, transport, territorial balance, economy...)

14 responses

- 1 — 0 (0%)
- 2 — 7 (50%)
- 3 — 3 (21.4%)
- 4 — 3 (21.4%)
- 5 — 1 (7.1%)
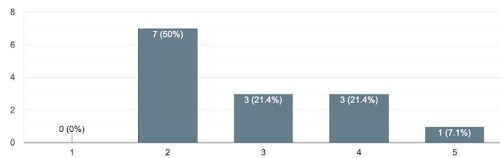
> for the community (environment, transport, territorial balance, economy...)

23 responses

- 1 — 1 (4.3%)
- 2 — 5 (21.7%)
- 3 — 4 (17.4%)
- 4 — 8 (34.8%)
- 5 — 5 (21.7%)
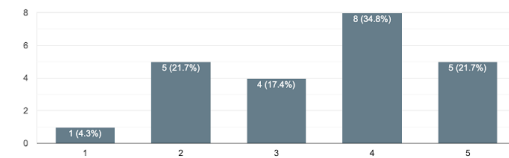
> other (to precise below)

1 response

- 1 — 0 (0%)
- 2 — 0 (0%)
- 3 — 0 (0%)
- 4 — 1 (100%)
- 5 — 0 (0%)
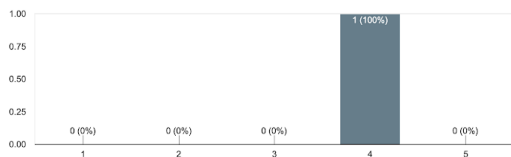
> other (to precise below)

5 responses
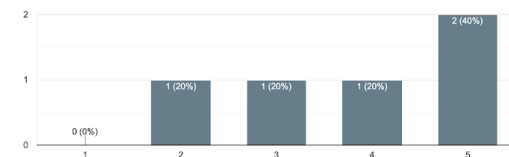
- 1 — 0 (0%)
- 2 — 1 (20%)
- 3 — 1 (20%)
- 4 — 1 (20%)
- 5 — 2 (40%)

(please precise here)

0 responses

No responses yet for this question.

(please precise here)

2 responses

For the organisation

To relax

[THANK YOU + MERCI] 👍 😊

[THANK YOU + MERCI] 👍 😊

285
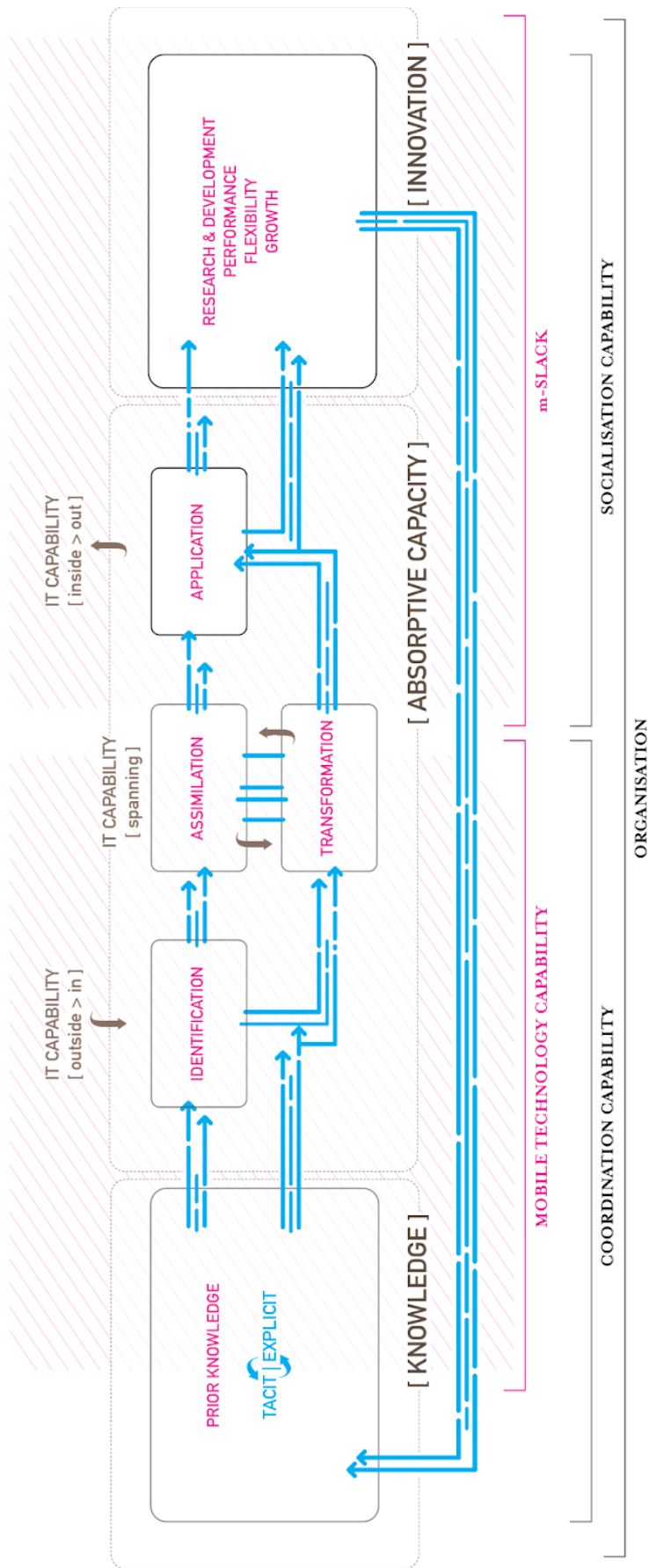
LA CRÉATIVITÉ EN MOUVEMENT

Comment la technologie mobile peut-elle permettre la collaboration et les pratiques innovantes ?

'Innovation comes from people meeting up in the hallways or calling each other at 10:30 at night with a new idea, or because they realized something that shoots holes in how we've been thinking about a problem. It's ad hoc meetings of six people called by someone who thinks he has figured out the coolest new thing ever and who wants to know what other people think of his idea'

–Steven Paul "Steve" Job, Apple & The Walt Disney Company, interview avec Business Week, 2004.

1.1 Fondement

Le début du 21ème siècle est caractérisé par l'augmentation de l'interaction entre individus grâce à un environnement numérique de plus en plus étendu, et à une accélération exponentielle du mouvement des années 80 en termes de production, plus spécifiquement par l'évolution/fusion rapide de l'économie créative et de l'économie de réseau. Cependant, la littérature relative à la technologie et notamment à la technologie mobile, se concentrant sur la créativité, la création de connaissances et/ou la gestion organisationnelle est peu abondante. De fait, au cours des cent cinquante dernières années environ, l'évolution des téléphones vers les smartphones est considérable : d'un appareil de base pour communiquer oralement, nous sommes passés à un appareil complexe qui, par son fonctionnement et ses fonctionnalités, peut être considéré comme le "couteau suisse" de la communication contemporaine. En outre, au cours des cinq dernières années, la technologie mobile a presque doublé les capacités d'accès à l'Internet par rapport aux ordinateurs fixes, ou portables, ce qui encourage également les PME à développer leurs sites web "mobile first",

comme l'a défini Eric Schmidt, PDG de Google, lors du Mobile World Congress en 2010. Ainsi, les smartphones et leurs produits connexes (tablettes, phablets, montres connectées) sont principalement utilisés au quotidien à des fins multiples et variées : que ce soit pour des raisons personnelles, ou pour des raisons professionnelles, les appareils mobiles sont devenus incontournables. Par conséquent, cette thèse vise à aborder la conception et la production de connaissances, leur organisation associée, à travers les technologies mobiles tout en mettant particulièrement l'accent sur les PME, qui sont souvent négligées malgré le fait qu'elles représentent la majorité des entreprises du secteur créatif.

1.2 Objectifs de la recherche

Ce projet de recherche examine en particulier les moyens permettant une innovation "ouverte", "démocratique" (Chesbrough et al., 2014 ; von Hippel, 2013) et "collective" (Demil et al., 2010 ; Suire et al., 2018) tout en impliquant les utilisateurs et leur(s) communauté(s) d'intérêt(s)/pratique(s) (Nelson & Winter, 1982 ; Amin & Cohendet, 2004) via un média omniprésent tel que les téléphones mobiles (Ahonen, 2011 ; Jenkins et al., 2013). En effet, compte tenu des ressources limitées ou bien définies de nombreuses PME, l'informatique et les stratégies de collaboration semblent être un moyen naturel d'accroître les performances et/ou de stimuler la croissance (Orlikowski, 2002, Chesbrough et al., 2014).

1.2.1 Question de recherche générale

Malgré des environnements de travail à forte intensité de connaissances de plus en plus imprévisibles et impliquant des interactions constantes entre des personnes, des groupes, des équipes, des communautés, des organisations et des entreprises éclectiques, il existe une constante dans l'augmentation de la transformation numérique afin de permettre à des

systèmes complexes d'obtenir "des propriétés très spécifiques, en particulier la non-linéarité des réponses aux stimuli" (Héraud & Burger-Helmchen, 2019, p. 1). Par conséquent, notre principale question de recherche porte sur la manière dont la technologie mobile (smartphones, phablets ou tablettes) peut permettre des pratiques (co)créatives à travers un large éventail de collaborateurs et d'environnements spatio-temporels ? Autrement dit, comment la technologie mobile peut-elle permettre des pratiques innovantes et collectives dans les PME ?

1.2.2 Finalités

'The management of a complex organisation must accept the idea that the system cannot be completely controlled, but only steered' (Héraud & Burger-Helmchen, 2019, p. 2)

Nos travaux de recherche se situent à l'intersection :

- du monde universitaire, par l'analyse et la synthèse des théories et de leur actualité ;

- de la recherche appliquée et du développement, par la prise en compte des impératifs des PME et des contraintes du marché telles que la mondialisation, la compétitivité et l'efficacité ;

- de la société par la mise en évidence d'un changement de paradigme potentiel dans le comportement et la pensée des gens en raison de l'avènement du numérique, comprenant la technologie mobile.

En outre, parce qu'un système complexe fonctionne de manière largement autonome et produit parfois des propriétés inattendues, ce qui est une forme de créativité (Héraud & Burger-Helmchen, 2019, p. 2), ce projet de recherche vise à mieux comprendre et définir certaines caractéristiques et conditions de la théorie et des pratiques de l'innovation en relation avec les nouvelles technologies, plus spécifiquement les technologies mobiles, afin

de déterminer clairement leurs caractéristiques en tant qu'acteur potentiel, un nouveau modèle pour transformer les idées en actions et pour gérer la créativité organisationnelle.

De plus, cette thèse examine le processus de (co)créativité en relation avec les défis internationaux pour les PME et fournit quelques pistes pour favoriser l'innovation grâce aux technologies mobiles.

1.2.3 Objectifs particuliers

Cette étude explore et définit certains des potentiels mobiles pour améliorer l'*Hono* Economicus* [*mot Māori : http://goo.gl/1jlfuo en référence à l'*Homo Economicus*] en révélant certains signaux faibles intégrés dans l'utilisation professionnelle mobile actuelle dans la sphère des industries créatives. En effet, en 2016, le World Economic Forum (WEF) avançait que "nous entrons dans l'ère de la quatrième révolution industrielle, une transformation technologique entraînée par un Internet omniprésent et mobile" qui "crée une demande accrue de technologie et de collaboration efficace entre les personnes". En termes de société, en raison de l'évolution rapide des tendances et de l'environnement du marché, de la compétitivité de plus en plus perturbatrice et imprévisible entre les nations et/ou les cultures, cela signifie que le niveau de complexité a fortement augmenté. Par conséquent, l'avenir incertain des sociétés exige de prendre constamment des macro et micro-décisions et de créer des interactions entre les citoyens et les entreprises. De manière coordonnée, les sociétés et/ou les entreprises doivent prendre des mesures pour rendre les opérations et les activités commerciales plus rapides et plus efficaces. Ainsi, les entreprises doivent rapidement adopter et permettre les progrès et les changements technologiques pour éviter d'être laissées à la traîne par la concurrence. Pour les PME, la situation générale précaire, notamment en période de COVID19, implique de prendre des risques concernant la gestion de leur capital et de leurs ressources, ainsi que leur main-d'œuvre de plus en plus

sollicitée pour faire preuve d'esprit critique et prendre des décisions commerciales adaptées en temps réel sans forcément de présence ou d'interactions physiques. Corollairement, l'enrichissement de l'espace de travail par une culture de collaboration florissante et une communauté internationale multipartite, devient essentiel pour la compétitivité des PME. D'ailleurs, comme le souligne le WEF en 2016, "la fabrication avancée, la mobilité autonome et les villes intelligentes nécessitent de véritables modèles de partenariat basés sur nos valeurs communes et doivent évoluer à la vitesse de l'internet" et "une stratégie d'intelligence artificielle bien mise en œuvre permettra aux organisations de donner à leurs employés les moyens d'être créatifs et de se concentrer sur la résolution des problèmes, d'améliorer et de personnaliser l'expérience des clients et de permettre une contribution à la société". Par conséquent, cette recherche examine la technologie mobile en relation avec les processus et les pratiques, la création de connaissances, afin d'améliorer la productivité des PME et la croissance de la société.

1.3 Mise en contexte

En ce qui concerne l'essence des sciences de la gestion, "une discipline fondée au carrefour de l'économie, de la psychologie et de la sociologie" (Taskin & Dietrich, 2020), cette recherche transdisciplinaire se situe à l'intersection du domaine de l'économie contributive (Économie), de l'économie numérique (Technologie), et de l'économie de la connaissance et de l'information (Créativité). Elle se situe également au confluent de l'entreprise libérée et de l'entreprise traditionnelle dans le cadre d'une approche constructiviste qui implique un écosystème de partenariat, de collaboration et de co-création : elle étudie une nouvelle définition de la relation de travail et de la gestion. En effet, sur la base des conclusions de von Krogh (1998) qui a démontré que "contrairement aux cognitivistes, les constructionnistes ont intégré les contributions des philosophes dès le début" (p. 150 ;

traduit par l'auteur), cette thèse aborde l'un des principaux défis identifiés par von Krogh, à savoir trouver des "conditions plus favorables aux fragiles processus de création de connaissances" (p. 148 ; traduit par l'auteur) dans les PME. En d'autres termes, ce travail suit la perspective de von Krogh (1998), qui consiste à définir la connaissance organisationnelle comme "un acte de construction ou de création" (p. 134 ; traduit par l'auteur) au lieu d'un "acte de représentation" (p. 134 ; traduit par l'auteur) comme utilisé couramment par les cognitivistes. Les méthodes utilisées ont été choisies pour examiner "ce qui devrait être" (von Krogh, 1998, p. 148 ; traduit par l'auteur) et révéler les connaissances tacites, inconsciemment cachées, non dites, des participants. En outre, en se référant à l'argument de Nonaka & Takeuchi (1995) selon lequel la connaissance est une "croyance vraie justifiée" (p. 58 ; traduit par l'auteur), ce travail vise à mettre en évidence certains points communs entre la perception personnelle et/ou individuelle concernant les pratiques de la technologie mobile. Ainsi, cette thèse met l'accent sur le fait que la création de connaissances est le résultat d'interactions sociales, ce qui implique de déchiffrer la connaissance tacite en une connaissance explicite grâce aux partages, en la rendant "publique" (von Krogh, 1998, p. 135 ; traduit par l'auteur). Par ailleurs, Slay & Stephens (2013) ont défini la "coproduction", dans notre cas nous parlerons de "(co)création", comme étant le résultat de la contribution de diverses personnes, de la planification à la production en commun. Par la suite, nous détaillerons comment la technologie mobile peut soutenir ce développement en rendant certaines interactions moins conflictuelles qu'elles ne pourraient l'être dans une situation de face à face, ou in-situ (en entreprise). En outre, selon von Krogh (1998), bien que l'obstacle fondamental à la conversion des connaissances soit "le besoin d'une langue légitime, en particulier d'un stock de mots" (p. 135 ; traduit par l'auteur), nous expliquerons dans les prochains chapitres que la technologie mobile, grâce à ses propriétés de média riche, peut favoriser les histoires orales et réduire la perte de connaissances. Aussi, nous montrerons en détail comment la technologie mobile peut améliorer "les conditions

favorables à la création de connaissances" (von Krogh, 1998, p. 136 ; traduit par l'auteur), et par conséquent faire progresser les pratiques, systèmes et/ou structures de collaboration et d'innovation.

L'innovation étant l'un des points clés de ce travail de recherche, l'éclectique liste des références représente les informations qualitatives denses et complexes rencontrées au cours des différentes analyses documentaires entreprises. À propos de l'ensemble de données : il provient des diverses explorations et comparaisons de données, des lectures suggérées, des références associées aux articles et/ou aux livres, des lacunes dans les connaissances créées par l'analyse des entretiens multiples. Par conséquent, les données qualitatives traitées dans cette investigation tentent de synthétiser et de mettre en évidence les références primaires et secondaires, qui ont soutenu le raisonnement analytique de manière exhaustive en décrivant le contexte (domaines d'investigation, auteurs), les idées (corrélation entre les références), les associations (principalement par le contenu et/ou le centre d'intérêt) et la causalité (en relation avec la question de recherche). Aussi, il représente notre "croyance vraie justifiée" (Nonaka & Takeuchi, 1995 ; Nonaka et al, 2000 ; traduit par l'auteur), soutenue par le raisonnement abductif (von Krogh, 1998) des principaux domaines impliqués dans ce projet de recherche, qui sont l'économie, la technologie, et la créativité ; ainsi que leurs intersections respectives, à savoir l'économie créative, l'innovation, et la gestion. Cette approche qualitative et abductive s'inscrit bien dans ce que nous développerons dans le prochain chapitre, à savoir la construction du sens ; nous reviendrons sur ces différents types de dichotomie dans les chapitres suivants.

1.3.1 Les champs de recherche

Cette étude devrait permettre au lecteur d'appréhender une autre perspective sur l'état des références en ce qui concerne l'exploration entreprise à partir d'un cadre de référence

particulier de gestion des savoirs (knowledge management) et des technologies de l'information et de la communication (TIC). Ensuite, puisque notre recherche se concentre sur le caractère innovant de la technologie mobile, l'innovation est considérée comme étant à l'intersection de la gestion de la connaissance, de la création et de l'organisation. Elle représente également les domaines les plus concernés ainsi que les différents concepts/catégories (Gioia et al., 2012) qui leur sont associés, tels que la gestion de la créativité, la gestion de l'organisation et la gestion des connaissances ; par exemple, dans le cadre de l'innovation, nous avons identifié cinq thèmes essentiels que nous avons extensivement développés dans plusieurs publications. Tous ces points seront développés plus en détail ultérieurement, et plus précisément dans les différentes publications qui composent ce mémoire.

1.4 Contributions

Cette thèse met en évidence trois éléments saillants associés à la technologie mobile. Le premier est un enrichissement de la fluidité des processus d'innovation, le second s'attarde sur l'habilitation des individus et des communautés de pratique, et le dernier accélère l'amélioration de la création de valeur et de la capture de valeur. Plus de détails seront fournis dans les prochains chapitres, visualisés ci-dessous.

[QUESTION DE RECHERCHE PRINCIPALE]

Comment la technologie mobile peut-elle permettre des pratiques innovantes et collectives dans les PME ?

INTRODUCTION

CHAPITRE 1 > Vue d'ensemble

> cette étude transdisciplinaire étudie une nouvelle définition des pratiques et de la gestion dans les ICs

CHAPITRE 2 > Méthodologie

> cette investigation utilise une approche mixte avec des études de terrain internationales

CHAPITRE 3 > Contexte et paradigme

> cette recherche contribue à une nouvelle compréhension des collaborations innovantes via la technologie mobile

PUBLICATIONS 1 & 2

CHAPITRE 4 > Un espace mobile pour les pratiques collaboratives et innovantes

Comment la technologie mobile peut-elle favoriser un espace de co-création entre les personnes et les processus ?

RECUEIL DE DONNÉES
[Phase 01 + 02]
> NZ/Aotearoa + France

CONCEPT CLEF
[BA MOBILE]
> ouvrir l'espace au-delà des connexions physiques

MOBILE = MIDDLEGROUND

PUBLICATION 3

CHAPITRE 5 > Une approche collaborative et innovante via la technologie et les réseaux mobiles

Comment les appareils mobiles peuvent-ils permettre des pratiques (co)créatives en dépit des structures et systèmes formels ?

RECUEIL DE DONNÉES
[Phase 01 + 02 + 03]
> NZ/Aotearoa + France + NZ/Aotearoa

CONCEPT CLEF
[m-COLLABORATION]
> stimuler des interactions entre individus

MOBILE = INTERCESSEUR

PUBLICATION 4

CHAPITRE 6 > Une mobilisation du "creative slack" et du "bricolage"

Comment les technologies mobiles peuvent-elles permettre aux PME innovantes de développer leur créativité ?

RECUEIL DE DONNÉES
[Phase 04 + 05]
> France + Japon

CONCEPT CLEF
[m-SLACK]
> favoriser la connaissance et la création de valeur

MOBILE = CATALYSTE

MOBILE = UN NOUVEAU NIVEAU DE FLUIDITÉ DANS LES PROCESSUS INNOVANTS ET COLLABORATIFS

CHAPITRE 7 > Synthèse + Conclusions + Implications

Visualisation de l'architecture de la thèse.

1.4.1 Contribution à la recherche

Tout d'abord, cette thèse tente de combler le manque de littérature sur la technologie mobile en relation avec la gestion de l'organisation et des connaissances en ce qui concerne les pratiques de collaboration et d'innovation au sein des PME dans le domaine des industries créatives. Certains chercheurs ont considéré la créativité managériale comme un facteur clef de la croissance, et la technologie comme un outil créatif ainsi qu'un nouveau paradigme de la productivité, et cette investigation complète et enrichit ce point de vue.

Deuxièmement, ce projet de recherche contribue à une nouvelle compréhension des collaborations internationales et innovantes grâce à la technologie mobile. De plus, elle apporte une nouvelle vision du concept de ba (Nonaka & Takeuchi, 1998), qui favorise un nouveau type d'"espace habilitant" (Morel et al., 2018) grâce à la "technologie habilitante" (Teece, 2018 ; 'enabling technology' traduit par l'auteur), au-delà des frontières organisationnelles ; elle apporte une perspective nouvelle quant aux travaux de Cohendet et al. (2010) en ce qui concerne le "relâchement créatif" (creative slack ; traduit par l'auteur et la notion associée de bricolage organisationnel (Cunha, 2005 ; Duymedjian & Rüling, 2010). D'autre part, il attire l'attention sur la technologie mobile en tant qu'intercesseur entre le "relâchement organisationnel" (Penrose, 1959; 'slack' traduit par l'auteur) et le "relâchement créatif" (Cohendet & Simon, 2008 ; creative slack traduit par l'auteur)

1.4.2 Contribution à la pratique

Cette recherche contribue à la pratique en ce qui concerne la manière dont les organisations pourraient accroître/améliorer leur(s) collaboration(s) internationale(s) et collective(s) (Chesbrough et al., 2014 ; von Hippel, 2013) en matière de création et de saisie de valeur dans l'innovation numérique, principalement pendant la phase d'exploration d'un projet, et

potentiellement vers la fin de la phase d'exploitation (March 1991 ; Capdevila, 2015). Une autre contribution porte sur la manière d'optimiser l'investissement financier pour les entreprises en comblant le vide organisationnel/créatif (Cohendet et al., 2010). Il s'agit donc d'améliorer l'apprentissage et la qualité/pertinence des résultats pour leurs employés et leurs clients respectifs. Cependant, le facteur économique le plus important a été déclenché par la crise du coronavirus (COVID-19), qui a forcé la plupart des individus à modifier leur façon de travailler, d'interagir, de gérer des projets et des lieux de travail. Le nouveau mouvement international ad-hoc appelé "Travail A Domicile" ('Work From Home' ; traduit par l'auteur) pourrait bénéficier des conclusions de cette thèse. En effet, comme les gestionnaires ont tendance à projeter leurs croyances et leurs conceptions mentales sur leur environnement de travail plutôt que de reconnaître régulièrement la réalité factuelle et/ou les changements qui se produisent (Schoemaker & Day, 2009, p. 88), les conclusions devraient intéresser à la fois les praticiens et les décideurs politiques en contribuant à l'efficacité de la gestion et aux ressources de l'entreprise : elles fournissent des indications sur la manière de le faire ; des indications sur la manière de "détecter activement les signaux faibles (exploiter les renseignements locaux, tirer parti des réseaux étendus, mobiliser les équipes de recherche)" ; d'"amplifier les signaux faibles intéressants (tester de multiples hypothèses, sonder la sagesse de la population, élaborer divers scénarios)" ; d'"approfondir et clarifier" (confronter la réalité, encourager les conflits constructifs, faire confiance à l'intuition aguerrie)" (Schoemaker & Day, 2009, p. 84 ; traduit par l'auteur). Selon les termes de Schoemaker & Day (2009) : le problème majeur est que les managers ne sont pas suffisamment conscients des préjugés cognitifs et émotionnels qui peuvent obscurcir leur jugement lorsqu'ils interprètent des signaux faibles. Lorsque l'ambiguïté est grande, nous pouvons facilement torturer les données faibles jusqu'à ce qu'elles avouent ce que nous voulons croire. Contrer ces tendances insidieuses nécessite un leadership ainsi que la maîtrise de divers outils pour combattre les filtres pernicieux qui obscurcissent et déforment

les signaux faibles importants. Dans un marché en évolution rapide, aucun d'entre nous ne peut se permettre de "passer à côté de ce que nous voyons" (p. 88 ; traduit par l'auteur).

1.4.3 Contribution à l'actualité/vie contemporaine

Puisque la gestion consiste à rendre l'action collective efficace et efficiente, cette thèse met en évidence certains phénomènes émergents associés aux technologies mobiles, qui sont la marque des systèmes complexes (Héraud et al., 2019). Elle révèle quelques signaux faibles à travers l'écoute des praticiens, des travailleurs, ce qui contribue à l'analyse large et actuelle de l'innovation, de la gestion de la créativité (Amabile, 1998 ; Caniëls & Rietzschel, 2015). Ainsi, elle fournit un protocole et quelques recommandations pour une mise en œuvre efficace (fertilisation de la conception/création à la gestion). Cette contribution est donc une approche renouvelée de la notion de bricolage organisationnel (Cunha, 2005), du concept de ba et du modèle SECI qui lui est associé - en particulier la phase de socialisation - (Nonaka & Takeuchi, 1995), et du concept de "creative slack" (Cohendet et al., 2010). Ce dernier suggère un nouveau niveau de fluidité dans les processus innovants et collaboratifs, grâce à la technologie mobile et à son développement actuel (5G, Web 4.0, Réalité Augmentée (RA), Réalité Virtuelle (RV), Réalité Mixte (RM), phygital, pour n'en citer que quelques-uns).

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Appendix 14 – Overview publications and presentations

Antonczak L., Neukam, M. & Bollinger, S. (*under double-blind peer review – publication expected late 2021*). From industry to academia: innovative learning practices in the digital area. In: Parsons, D. & MacCallum, K. (eds) *Industry Practices, Processes and Techniques Adopted in Education – Supporting innovative teaching and learning practice*. Singapore: Springer.

Antonczak, L. & Burger-Helmchen, T. (2021). Being mobile: a call for collaborative innovation practices?. *Information and Learning Sciences*, *12*(5/6), 360-382. https://doi.org/10.1108/ILS-02-2020-0035

Antonczak, L. (2021). Mobile Technology: Innovative and creative practices enabling learning environments in Higher Education & Business. *Pacific Journal of Technology Enhanced Learning*, *3*(1), 29-31. https://doi.org/10.24135/pjtel.v3i1.98

Antonczak, L. (2021, February). *Digital creation workshop I, II & III*. Three-session workshop presented at the #creatoyo/Toyo University, Online.

Antonczak, L. (2021, January). *Publicité et Industries Créatives / Mobile story-telling and film-making*. Three-day workshop presented at the IAE-Nice, Online.

Antonczak, L. (2020). Instagram: pique et pique et LOL le drame. *The 8th Colloque International Mobile et Création 'Pandemix.mob'*, December 8-9, Paris.

Antonczak, L. (2020). Mobile technology: a new ba of work organisation?. *Innovations - Journal of Innovation Economics & Management*, *31*(1), 11-37.

Antonczak, L. (2020, July). *Design Thinking*. One-week workshop presented at the University of New Caledonia, Nouméa.

Antonczak, L. (2020, July). *From ideation to innovation: an overview of the creative process for young entrepreneurs*. Guest-lecture presented at the Toyo University/Global Innovation Studies, Online.

Antonczak, L. (2020, June). *Mon entreprise et la créativité : un besoin réel, ou une belle histoire pour mon marketing ?*. Think piece presented at the launch of the new programme of Pépite Nouvelle-Calédonie 2020, Noumea.

Antonczak, L. (2020, May 11). *Interview with Lesya Dymyd – Mobile, Digitalization of Society and Social Media Security*. Retrieved from https://youtu.be/vpE09CGN2lY

Antonczak, L. (2020, April). *#creativité #brainstrorming #mobiletechnology #collectiveinnovation*. Think piece presented at the Workshop 3C/2CRSI/ACCRO, Online.

Antonczak, L. (2020, January). *How to use social media in the smartphone age? Part I & II*. Two-session workshop presented at the #creatoyo/Toyo University, Tokyo.

Antonczak, L. (2019, December). *Publicité et Industries Créatives / Mobile story-telling and film-making*. Three-day workshop presented at the IAE-Nice, Nice.

Antonczak, L. (2019). Scaling-up collaborative practices through mobile technology. *The 25th International Conference on Engineering/International Technology Management Conference (ICE/ITMC),* June 17-19, Nice.

Antonczak, L. (2019, April). *Creativity on the move. –How can mobile technology enable collaborative innovation in practices and organisations?*. Poster presented at the 16th Augustin Cournot Doctoral Days (ACDD), Strasbourg.

Antonczak L., Lees A. B., & Cochrane T. (2019). Beyond the classroom borders: A human-based transdisciplinary collaboration enabled by technologies. *The 2nd Scholarship of Technology Enhanced Learning (SoTEL) Symposium*, February 14-15, Auckland.

Antonczak, L. (2018, November). *Environnement 360° ou la VR en mode DIY*. Workshop presented at the École d'automne en management de la créativité, Strasbourg.

Antonczak, L. (2018, September). *COLAB en NZ : lab digital entre université et entreprises*. Think piece presented at DIGINOVA, Noumea.

Antonczak, L. & Menorath, D. (2018, September). *Mobile Serious Game Sprint*. One-week workshop presented at the Villa Arson, Nice.

Antonczak, L. (2018, August). *Mobile Social Media for Young Entrepreneur*. One-week workshop presented at the Ministry of Health, Suva.

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Laurent ANTONCZAK

CREATIVITY ON THE MOVE

Résumé

Cette thèse vise à mieux comprendre et définir certaines caractéristiques et conditions de la théorie et des pratiques de l'innovation en relation avec la technologie mobile. Cette dernière est considérée comme actrice potentielle et nouveau modèle pour transformer les idées en actions et pour gérer la créativité et le management organisationnel dans le domaine des industries créatives. Basée sur une approche qualitative, cette thèse met en évidence trois éléments saillants associés à la technologie mobile. Le premier est un enrichissement de la fluidité des processus d'innovation comblant un manque dans la littérature sur la technologie mobile, la gestion des organisations et des connaissances, et les pratiques collaboratives et innovatrices au sein des PME. Deuxièmement, cette thèse contribue à une nouvelle vision du concept de *ba* (Nonaka & Takeuchi, 1995) au-delà des frontières organisationnelles, et la définition du *ba mobile*. Enfin, elle apporte aussi une perspective nouvelle sur les travaux de Cohendet et al. (2010) en ce qui concerne le "relâchement créatif" ('creative slack') et les notions associées de création et de capture de valeur pour les PME.

Mots clés : ba, co-création, collaboration, communauté de pratique, créativité, innovation, organisation managériale, PME, technologie mobile

Résumé en anglais

This research aims to better understand and define some characteristics and conditions of innovation theory and practice in relation to mobile technology. Mobile technology is seen as a potential actor and new model for transforming ideas into action and for managing creativity and organisational management in the realm of the Creative Industries. Based on a qualitative approach, this research highlights three salient elements associated with mobile technology. The first is an enrichment of the fluidity of innovation processes filling a gap in the literature on mobile technology, organisational and knowledge management, and collaborative and innovative practices within SMEs. Secondly, this research contributes to a new vision of the concept of *ba* (Nonaka & Takeuchi, 1995) beyond organisational boundaries, and the definition of the *ba mobile*. Finally, it also provides a new perspective on the work of Cohendet et al. (2010) regarding 'creative slack' and associated notions of value creation and capture for SMEs.

Keywords: ba, cocreation, collaboration, community of practice, creativity, innovation, managerial organisation, mobile technology, SME