Enhancing mobile strategy consultancy using a conceptual cognitive model of Mobile Moments

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Declaration

I hereby declare that this paper submitted in partial fulfilment of the DBA degree is my own work and that all contributions from any other persons or sources are properly and duly cited. I further declare that it does not constitute any previous work whether published or otherwise. In making this declaration I understand and acknowledge any breaches of the declaration constitute academic misconduct.

Signature of author	Date

Abstract

The given dissertation focuses on the area of mobile business interactions and strives for a better understanding of related human cognitive characteristics. One motivation is to find out the individual triggers for someone reaching for a mobile device and how this can be used to establish a relation between optimised drivers of cognition and the employee's performance in mobile workforces.
In this way, mobile technology is already a fundamental part of consultancy and field-working industries, however, the identification of individual benefits and mobile-enhanced strategies lags behind. A proper understanding of relevant drivers for supportive mobile interactions stumbles behind the fast pace of technological trends and especially misses specific chances and opportunities in mobile business.

The research takes this into account and builds up a comprehensive route from today's analogies from a non-digital world, via psychological and human-resource definitions and theories, towards a practice-oriented model of individual mobile business interactions called Mobile Moments. The qualitative approach used resides in a theoretical foundation of historical and contemporary literature in combination with reflective and aggregating input from a practice-focused main study.

As a result, this research outlines the underpinning facilitators and drivers of mobile business interactions including their relations and dependencies. With practical insights and iterations, a conceptual model of Mobile Moments derives from various areas of technology, business and psychology and provides guidance on its application in practice. The results of the qualitative study with subject matter experts (>10) is justified as part of an exemplary application into an established mobile consultancy approach.

The research provides a detailed view on related human cognitive characteristics, impacts on workforce performance as well as technological viewpoints in current mobile enablements. The summarised outcome of the research is a fundamental extension to existing user-oriented tools and practices by the means of Mobile Moments. It enhances the common awareness and, even more, it provides a structured model to extend the focus from existing to-be-mobilised problems to the currently unknown, but promising, mobile-only opportunities.

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List of abbreviations

DBA Doctor of Business Administration

FAQ Frequently asked questions

IBM International Business Machines

IT Information technology

LTM Long-term memory

MBI Mobile business interaction

SME Subject matter expert

STM Short-term memory

UC Usecase (= scenario of application or case study)

VIE Valence, instrumentality, expectancy

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Part I

Introduction

1 Motivation and introduction

> *Enhancing mobile strategy consultancy using a conceptual cognitive model of Mobile Moments*

If being asked, an often used and common description of the research topic resides in a simple example: The study aims to understand what compels someone to pull out his mobile device, in various situations, and how this comprehension can be used within business scenarios.
Following the example, this introductory chapter provides a glimpse of the underpinning motivators, intentions and rationale of the topic, while outlining its overall structure and research approach.
First the contextual background is framed, which is then followed by a description of the major aims and objectives consecutively. Always in relation to the given area of interest. Initial discussions about being mobile at work advocate the overall frame and address the upcoming major theories and ideas raised or described in the extant literature. Taking this as a basis, an overview of the research design further elaborates the approach on how to advance and contribute to theory and practice. A short summary on each of the upcoming chapters concludes the introduction and illustrates the thesis' overall structure.

1.1 Purpose and rationale of the research

> *The power of the individual will spur innovation and reshape the way companies communicate, collaborate and socialize with employees, partners and customers* (Kapadia, 2014, p. 3).

This statement from the global trends for shaping the business world in 2014 kicks off the thought process throughout the given study. Understanding the importance of individuality in business interactions represents one of the major motivators for doing research on opportunities, especially in mobile strategy and workforce performance.
Taking this into more current discussions, individuality is more important than ever: Marshall (2017) introduces the concept that the mobile world is shifting or has already been shifted into the *post-app era*. Although this initially sounds like the end

of the mobile app-culture, it "is actually saying that the role of apps is increasing and becoming more important; it is the way people interact with them that will change" (Mubaloo, 2017, para. 1). Multiple researchers agree that interaction has to become more immersive and fluent, when it comes to mobility, mobile business and technology. They are highlighting related paradigms, describing concepts which are all about supportive and individual mobile experiences happening independently of particular apps or technologies (Hwang et al., 2017, Linnes et al., 2017, Vermesan et al., 2017). Wordings like *intelligent assistants* or *cognitive applications* are only a small excerpt of these emerging paradigms.

The research takes these trends into account and also identifies the current challenge in defining what a mobile worker (=user) considers as an intelligent helper for his individual requirements. The underlining question is, how these supportive interactions need to be designed to meet the user's expectations in order to provide benefits from both consumer and entrepreneurial perspectives.

The rationale of the research is therefore grounded as an extension to the extant literature and knowledge. It enhances the understanding of supportive interactions and how these might be individualised by developing and referring to a cognitive-driven conceptual model. Hereby the definition of a cognitive model implies that "a model can be characterised by four main dimensions: (1) purpose, (2) mapping of an origin, (3) use of languages as a carrier, and (4) providing a value" (Thalheim, 2014, p. 41). In this context, the intended model pursues a detailed understanding of the concept of Mobile Moments, while outlining the motivators from theory and location in practice. (*Mobile Moment (defined in 2.5): A situation, in which a human being is in spontaneous need of immediate interaction with information independent of his current location, time and/or task.)*

In a context of psychology, business and technology, a shared thesaurus is used and ultimately intends to be applied to actual strategy consultancy achieving performance benefits. The primary idea for the given research resides in leveraging mobile workforce performance by understanding the conceptual model of Mobile Moments. For this, the model identifies and targets employee-centric opportunities in mobile strategy consultancy and its application. By a combination of different broader dimensions within technology, entrepreneurial practice and cognition theory, the research aims to fill the current gap of identifying relevant drivers to enhance mobile business interactions.

1.2 Implications

The outcome as well as the overall process targets different audiences and stakeholders. This section proposes the rationale in terms of organisational roles and their expected area of impact or influence. A suggested path of how to apply the study's outcomes across these roles can be found in the concluding chapters of the dissertation (see Section 5.1.4).

Mobile employees in consultancy or field-working companies are targeted to better understand the expectancy of mobile technology in their daily work. The research also aims to raise awareness about mobile interactions and helps to drive the ethical considerations in combination with practical and organisational usecases (= scenarios of application). The employees are the target users of mobile strategies and are considered as one of the key stakeholders in this research from an abstract point of view.

Strategists in workforce-oriented roles represent the consultancy factor in the research. When defining digital or mobile strategies for their clients, strategists are encouraged to involve the outcomes of the given thesis in their appliance oriented considerations. Their valuable input and experience is also key to enriching the integrative aspect of the conceptual model defined by the research.

Consumers may be interested in understanding the cognitive background of Mobile Moments. Aspects and awareness of mobility in their daily life might become more obvious through the results of the study, which aim to outline the major triggers and drivers for mobile interactions. The research supports the consumer-oriented thought process by providing shared and comprehensive models linking to common usecases.

Innovators considered with mobile devices, applications and new paradigms can use this research as a guideline to understanding the concepts of human-mobile interactions. It outlines the cognitive processes involved and dependencies across several internal and external factors and suggests potential appliances.

Researchers in the field of mobile practice are able to build up or extend their ongoing studies by considering the developed conceptional model. The research also encourages further research on the topic of Mobile Moments, especially in the areas of concrete and empirical scenarios. This might identify potential usecases in practice while simultaneously enhancing the applicability of the model in upcoming mobile trends and eras.

The research should not be limited to those five personae, rather it outlines some of the tangled roles in business and leisure. Throughout the following chapters and especially during the study, the given roles and their impacts are shown in more detail.

They are not only seen as a primary target group or stakeholders of the thesis, but also as important influencers in the construction of the integrative conceptual model of Mobile Moments.

1.3 Research motivation

The potential impact on stakeholders, in extension to the main rationale of the research, already suggests the expected value and contextual setting of the given research topic. In addition, the following section takes a step back and outlines some of the key motivators and analogies which frame and relate the author's underpinning thoughts and creative process in developing this research.

In the sphere of psychological science, cognition theories primarily aim to understand the human sensory and processing system. Cognitive research targets the potentials for optimising sensory performance within perception, problem-solving and analogical thinking (Wagman, 1995). The given thesis aims for a similar goal: Striving for potentials in individual performance (defined in 2.1) in the explicit context of work supported by mobile technology. Whilst Chapter 2 goes into more detail on the current state of the art in business, psychology and technology, the initial motivation for this particular research actually comes from the "non-digital" world. It describes a peak of human performance by the occurrence of particular sets or states of cognitive effects:
The first, and probably the most constant, experience is described by Steven Kotler as *flow:* "an optimal state of consciousness, a peak state where we both feel our best and perform our best. It is a transformation available to anyone, anywhere provided that certain initial conditions are met." He continues, "in flow, every action, each decision, leads effortlessly, fluidly, seamlessly to the next. It's high-speed problem-solving; it's being swept away by the river of ultimate performance" (Kotler, 2014, p. 6).
Although his research focuses on the performance of athletes in action and extreme sports, Kotler also suggests the concept of flow to be considered in any cognition-oriented activity. Regardless of the individual's area of interaction, for example musicians, designers or assembly-line workers, flow always offers an opportunity to perform better (Kotler, 2014). Further research describes this phenomena as the so-called *flow-effect* (Csikszentmihalyi, 2014) and defines an own theme within psychological science around it. Without going into much detail, the concept of flow defines one of the major motivators for the research: Understanding flow as a driver for cognitive performance, the study admits the desirability of its mental state and aims to outline especially mobile triggers and behaviours to keep it. The related motivation relies on the idea that

there are multiple potentials, coming from cognitive performance theories, which have not yet been looked at from an organisational and job-related perspective.
In close relation to the flow-effect, another positive attitude (relating to "feel our best" from earlier definition) and situative effect comes into play by so called *aha-moments* or *eureka-effects*: A "positive affect and perceived truth and confidence in one's own judgment [which] are triggered by the sudden appearance of the solution for a problem and the concomitant surprising fluency gain in processing" (Topolinski and Reber, 2010, p. 402). In other words, a moment of positive obviousness, where a solution to a given problem is eminent and occurs unanticipated. Topolinski and Reber describe this phenomena as a combination of the factors *suddenness* - the abrupt and surprising appearance, *ease* - the easy and obvious solution, *positive affect* - the relieving experience and *confidence* - the personal trust in judgement.
Taking this analogy as a second motivator, the underpinning challenge derives from how to potentially simulate such an effect by using mobile technology at the right time. Or in combination with the concept of flow: How to identify and create synthetic "aha-moments" to support the worker's flow in his current activity.
A Mobile Moment hereby represents the contextual analogy for the defined "aha-moment". In the sense of a technologically supported, deliberately targeted and comprehensively designed moment it represents a unique helper for a particular task of a mobile user.

1.4 Purpose of a Mobile Moment

The combination and analogy to the "non-digital" world forms the major motivation to further understand the potential role of Mobile Moments in current work-environments and future mobile strategies. The following section describes the intended purpose of those moments in more detail, focusing especially on its positioning within the business context.
A Mobile Moment, as developed, defined and differentiated as part of this research (see 2.5), aims for optimisations in job performance and fulfilment of the employee's particular needs in work-related scenarios. It is also used as a concept to connect the scientific spheres of mobile technology, business expectancy and cognitive psychology in terms of their shared influence on a user's mobile experience. It outlines the topic's multidisciplinary nature to be considered, while located within user-centric mobile strategies (Still and Crane, 2017) and the current cognitive gap within mobile business interactions as defined later on in Section 2.4.
The concept of Mobile Moments, as developed by the given research, provides insights and suggestions into mobile strategy as an inclusive and linked system of cognitive,

entrepreneurial and technological drivers, whereby each of the categories is bringing in a different aspect to be considered: Cognitive drivers describe the individual's demands. This includes psychological models of perception, problem-solving, learning and other processes in the human mind. It opens up the sphere of personality, emotion and anthropogenic expectancy.
Drivers defined from the business and entrepreneurial point-of-view focus on organisational demands. These provide a view on the externalised and role-specific expectancies and bring in the values of job performance and workforce efficiency. Technological drivers and concepts bring in the contextual setting. They describe the availability and supportiveness of particular activities and define the connector between the earlier two categories.
All of them are connected as part of the research approach, whereby their definitions, relations and dependencies are becoming more comprehensive within the following chapters. Moving from the contextual area to a cognitive model of mobile business interactions, towards the conceptual model of Mobile Moments. In other words, and related to the overall research topic, the given study focuses on understanding the conceptual model of Mobile Moments in order to leverage an employee's performance as part of the mobile workforce. It is then suggested that the developed model is taken forward into the design of practice-oriented mobile strategies.

1.5 Research context

The research context provides a short glance at the current state of the art and trends within the main research areas: Mobile technology, mobile business and related cognitive psychology. It also provides an overview of the main industry focus in relation to the research title and defines the primary area of investigation. Furthermore, the context gives an initial understanding about important themes to be targeted by the research's objectives with the common aim to influence future mobile business.

As mentioned in Section 1.2, the targeted audience spans from strategists and innovators towards consumers and mobile workers. This not only determines the roles to be looked at, but also illustrates the main research focus on mobile consultancy within mobile and field working industries. As part of these industries, mobile strategies are becoming increasingly important and are also already considered in current organisational structures.
This also includes the awareness and opportunities to invest in devices, integration and innovation. As described in the latest results by Roberti (2018), companies are willing to invest in mobility's first step devices (Roberti, 2018). The study hereby refers to

its outcome as "a landmark study of IT solutions, investment priorities, and emerging technologies in over 85 percent of the European economy. The sample consists of 1,967 organizations across European vertical markets" (Roberti, 2018, p. 4).
It also includes a statement that 85 percent of the respondents are planning to maintain or extend spending on devices in 2018, which is mainly motivated by the increasing share of mobile workers within their workforces. But one crucial insight from the study refers to a common insistence on four basic functionalities (calls, email, messaging, browsing), rather than expanding dedicated mobile capabilities and innovation on individual's needs (Roberti, 2018). This is already one of the major statements and is taken forward into the upcoming research on opportunities in practice (see Section 2.5). Foust (2018) even extends this argument in the utility sector by stating, that the determination of digital field workers' needs and contribution to field force business outcomes is key to a successful digital strategy. They also suggest the relation, that extended mobile workforce solutions drive productivity improvements and enable cost reductions in utility field work operations (such as scheduling, dispatch and supply chain) (Foust, 2018).
Mobile maturity is one of the keywords as part of current digital strategies. It describes the overall assessment and opportunities of a given organisational setup with the aim of strategically tuning the entrepreneurial setting towards a mobile mind shift. Although this topic is defined as part of almost every digital transformation guideline, including strategy consultancy, the fundamentals are often shared (IBM Corporation, 2018b). As an example, Ask and Hammond (2018) suggest the following four steps towards the mentioned mobile mind set (see Fig. 1.1).

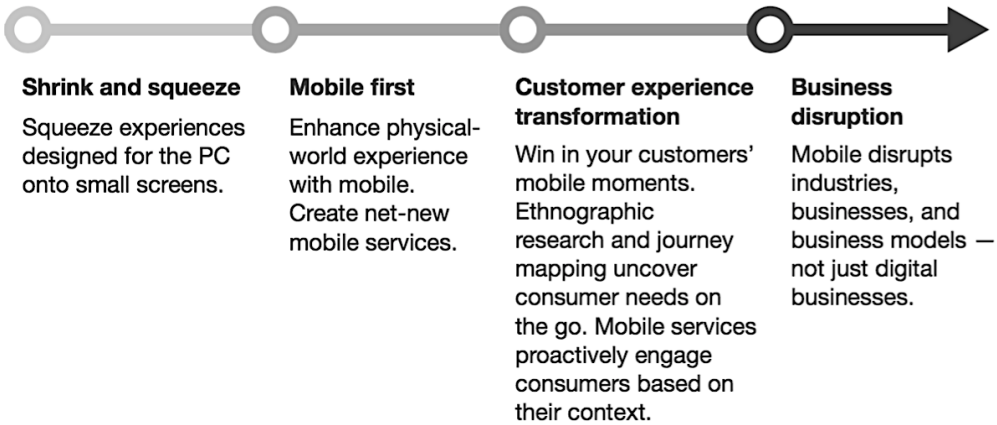

Figure 1.1: Mobile mind shift maturity framework (Ask and Hammond, 2018, p. 5).

Considering this as just one example of current consultancy practice, it supports the positioning of the research within an actual business context. Especially step three of the shown Figure 1.1 illustrates the practical relation of doing research on Mobile Moments and the individual support of mobile users in business. Hereby mobile goes beyond technological limitations and towards social considerations, as Oswald and Kleinemeier (2017) propose: "Mobile is the ability to move around freely with and though mobility-enabling technologies, [...], which allow us to be part of - and to participate - in a global and hyper-connected world" (Oswald and Kleinemeier, 2017, p. 311). Taking this as an underpinning thought, the expectancy and experience of mobility is becoming more important than the plain characteristics of technology.

1.6 Research guide

Mobile Moments have been introduced as the major concept and focus of the research. Although its detailed definition and description is pending for later chapters, it represents the golden thread throughout the discussions. The analogy to the "aha-moment", as described in Section 1.3, provides the initial background and initiator of the study. Building on top of that, Mobile Moments are used as a commonality to setup the contextual frame and to locate the research within the current state of knowledge.

Coming from the overall setting, relating it to the identified scientific areas proposes a view on current research gaps and concepts to be considered from theory and practice. These form the scientific foundation of the intended model and aim for further cognitive understanding in terms of mobile business interactions. With extended knowledge and relations of given theories, an initial cognitive model of facilitators describes Mobile Moments from an individual's point of view. Organisational needs, in combination with this model, subsequently form a set of research questions which are the preconditions for the main study and strive to gain additional input from practice and experience.
For this purpose, a qualitative research approach enhances the process of understanding by extended interpretations and subjective appreciation. Major business drivers and influencers of mobility are combined in a conceptual model of Mobile Moments afterwards and represent the theoretical outcome of the research. An initial evaluation of the model's application concludes and summarises the practical influence on future mobile strategies. In addition, it proposes further activities as part of a consecutive research progress. For the sake of consistency and comprehension, the given research guide also defines various important milestones towards the intended conceptual model of Mobile Moments (see Section 5.1.1).

The following illustration summarises the research process accordingly (see Fig. 1.2) and will be extended throughout the research:

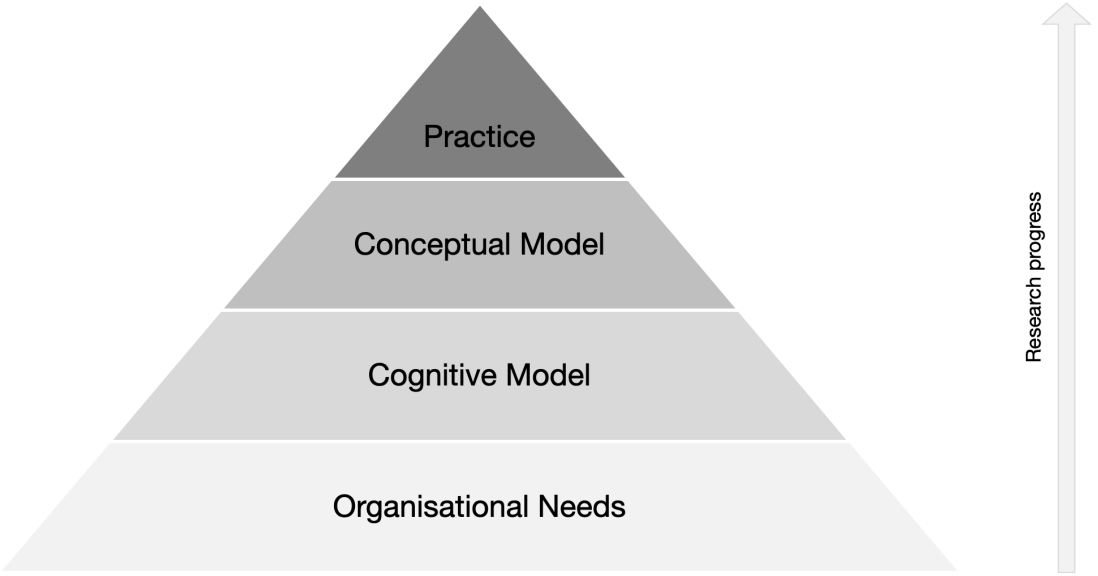

Figure 1.2: The underpinning research process (Source: Author).

1.7 Research design, aim and objectives

This section outlines the main research characteristics upfront. It gives an overview and outlook before actually going into the details and discussions. The characteristics are defined by the major aim, the concrete objectives, the overall study design and its limitations and boundaries. In addition, the intended contribution to knowledge, as well as to practice, are outlined separately.

1.7.1 Aim

The primary aim of the research is to outline the underpinning facilitators and drivers of mobile business interactions and their relations in terms of a concept of Mobile Moments. This includes the ancillary aim to better understand the related human cognitive characteristics in order to leverage workforce performance by enhancing mobile strategy consultancy and practice.

1.7.2 Objectives

In regards to the mentioned research aim, the following primary objectives have been defined:

1. Understand the existing concepts of mobile business interactions and their relations to workforce performance
2. Identify, define and combine major organisational and cognitive facilitators of Mobile Moments
3. Develop a comprehensive conceptual model of Mobile Moments for mobile strategy consultancy
4. Outline how the developed conceptual model influences future mobile strategies

These objectives align with the earlier introduced research process (see 1.2). Understanding the context and topic's foundations; Followed by deriving the most important facilitators; Moving into the development of a comprehensive illustration of identified relations and concluding by an evaluation of the model's innovative influence on mobile practice.

1.7.3 Research design

The research design is located in the sphere of constructivism towards qualitative ontology and epistemology. This identification, as derived in Chapter 3, aims to enrich existing knowledge by understanding the current state-of-the-art combined with major facilitators of mobile business. Taking into account the social and organisational relations from a critical realist's position, allows the research to provide a multi-disciplinary developmental approach towards a conceptual model of Mobile Moments (Bhaskar, 2010). It appreciates the individual's perception and experience to offer comprehension not only from empirical but also from subjective data, always in relation to the defined objectives (Coolican, 2014).
The combination of models, from rather empirical-driven scientific areas of cognitive psychology and organisational performance with experience-oriented data from practice, offers another unique viewpoint on existing knowledge. It illustrates the potentials and opportunities of its application within mobile strategies. Further details about the derivation of the research design as well as its implications can be found in Section 3.4.

1.7.4 Research boundaries

As mentioned before, the study focuses on understanding the influential facilitators Mobile Moments and their potential usage within mobile workforces and strategies. By this, it reveals various areas of mobility, psychology and organisational behaviour. All of them provide a vast scale of research topics on their own, nevertheless, the primary challenge of this research is, to identify the small but relevant gaps between them.

In addressing this, an identification of missing factors described by individuality and cognition leads to gaps and potentials. All are framed and located within the sphere of mobile business interaction and how these might leverage the mobile practice and usage in modern workforces. For this, the study builds up theoretical knowledge in terms of a cognitive model, and enriches it by strategical and practical expertise. The collection of primary data, as required for the development of the conceptual model, focuses on a consultant's and strategist's perspective, but also clearly suggests potential consecutive research in terms of an actual appliance and evaluation of the model. The given study provides a comprehensive understanding and a primary model of Mobile Moments, while suggesting a path of appliance into mobile strategy, but stops at the edge of empirical and quantitative tests of the same.
The chosen research design, including the ontological stance, is also well known as a subject to philosophical criticism and critical discussions (Gomm, 2009). But rather than strictly insisting on a philosophy, the study refers to the research aim to acknowledge qualitative methods as a suitable approach, while at the same time, proposing quantitative analysis as a potential approach to further research.
An ethical point of view is a substantial part of qualitative research (Hammersley and Traianou, 2012). In addition to the philosophical view on ethics, the research topic itself is close to a very sensitive area of investigation. The interaction with mobile workers and how the concept of Mobile Moment might impact the daily and private life comes up in several areas. It is considered throughout the whole research, but limits its evaluation of the actual impact. The reason for this can be found in the ethical discussions in Section 3.8. Other intended and derived limitations of the given research and how to work with them will be provided as part of the conclusive Section 5.2.

1.7.5 Contribution

The earlier sections have already provided a glance at the aims and objectives to *enhancing mobile strategy consultancy using a conceptual cognitive model of Mobile Moments*. In summary, the following contributions are defined as part of the given dissertation and align with the guidelines of qualitative research (Elliott et al., 1999):

Knowledge: Identify, understand and relate missing factors of cognition theory into the concept of immediate mobile business interactions.

Practice: Provide a comprehensive conceptual model of Mobile Moments to (1) raise awareness about facilitators and to (2) guide its integration as part of mobile strategy consultancy.

The research proposes two major artefacts and develops itself from a *cognitive model* of Mobile Moments, characterising mobile business interactions, to a consecutive *conceptual model* of Mobile Moments, ready to be applied into mobile strategies. The cognitive model enhances the current body of knowledge by understanding the major facilitators, whereby the conceptual model, and the underpinning framework, provides guidance to apply the acquired knowledge into practice, especially aiming for optimisations in mobile work.

1.8 Chapter overview

The introductory setting in mind, this section provides a short overview of the upcoming chapters and discussions in relation to the research guide (see 1.6). A small summary is followed by its intermediate aim which justifies its explicit purpose within the thesis.

Chapter 2

Within the chapter of literature review and theoretical foundation, the major theories, concepts and models are introduced and discussed across the research topic. The underpinning thesaurus is set up by defining the research areas involved and potential gaps in current theory. Literature and thoughts from the scientific areas of psychology, technology and business are taken into account while developing the cognitive model of Mobile Moments. A set of research questions precondition the upcoming study and highlight the important queries to be looked at. The major purpose of this chapter is to outline the theoretical context of the research including current gaps and their potentials within mobile business.

Chapter 3

The methodology describes, discusses and justifies the selected research philosophy. It outlines the selected design, approach and methods in relation to the expected outcomes in an academic context. It also takes into account the author's reflective aspects and philosophical standpoint to provide a better understanding of the choices made as part of the progress. Methodology also defines the study's process in terms of the steps to be taken including preparation, conduction, analysis and interpretation. Study characteristics of the pilot, main and follow-up study are outlined in order to justify the method's appropriateness in relation to the research questions and objectives. This chapter outlines the underpinning philosophical and methodological approach in order to sustain the comprehension of study outcomes.

Chapter 4

Findings and discussion includes the actual results of the studies conducted and analyses the outcomes in detail. First, it provides an overview on accessibility of the data collected from a total of eleven interviews between 2016 and 2018. Afterwards, findings are documented, coded and grouped in order to precede their interpretation. Theming provides meaningful clusters towards the targeted conceptual model and its iterative relation to extant theory. Results of a separate follow-up study are taken into account in order to connect with current mobile practice explicitly and to provide additional comprehensions, thoughts and outlooks. The chapter's purpose is to document the conducted studies as well as to analyse the gathered data, while targeting the identified gaps in theory and practice.

Chapter 5

The conclusive sections summarise the research's outcomes by visualising the final conceptual model of Mobile Moments. They also propose an outlook on its application into mobile strategy consultancy and reflect on limitations, outcomes and research journey. The conclusion sums up the dissertation as a whole and relates it to the expectancies set out in the introduction. The aim of this chapter is to close and finalise the current research by summarising the results and outlining potential consecutive actions.

Part II

Literature review

2 Review and theoretical foundation

> *Assumptions about the pace of life speeding up abound in contemporary social theory. While many factors are contributing to this phenomenon, [mobile] information and communication technologies are seen as the main drivers* (Wajcman, 2008, p. 1).

This statement, published in 2008, illustrates the widely-perceived importance of mobile technology and its impact before or at the beginning of the so called "smartphone era" dated around 2006 and 2007 (Agger, 2011, p. 121):
The increasing importance of being available and having access to information at any point of time and in every situation has changed human interactions and experiences in many terms (Caron and Caronia, 2007, p. 4). There is mobile technology as a theoretical and technical context by itself, but the upcoming discussions and sections aim to focus explicitly on the opportunities of mobility in the sphere of the employee's individual business interactions. This distinction allows a multi-dimensional view of the individual's interaction, without the limitations of today's available technologies but with a focus on their appliance as part of companies' mobile strategies.
Mutualmobile (2012) describes mobile strategy as one that aligns business goals, user needs, and evolving mobile technologies to allow teams to shift their focus to what to do and how to enable it for their purposes. One simplistic and superficial definition for mobile technology can, therefore, be taken forward as follows: *Mobile technology is defined as any device with internet capability that enables users to communicate, study or work flexibly in terms of time and place* (Unhelkar, 2008).
While the determination of scope and limitations, as concluded in Section 5.2, forms the boundaries of the given research, the following chapter frames the theoretical foundations necessary to understand the multi-dimensional view of spontaneous mobile interactions in general and explicitly their occurrence within mobile workforces.

As a result of critical research on current literature and models, a reflective Section 2.10: Combining the concepts, provides the derivation and construction of an initial *cognitive model*. This model focuses on the major questions of where, when and with what information a mobile business interaction might form business value. It summarises the theories and ideas discussed and puts them into relation according to the research area of Mobile Moments. The herewith constructed model relies on a set of

key cognitive and organisational characteristics associated with spontaneous mobile business interactions and precedes the formulation of three major research questions. In fact, these questions build the bridge into practice with the aim to further understand appliance, relations and opportunities of the cognitive model within mobile business. For the sake of rhetorical and literary precision, this chapter also identifies and specifies necessary definitions, evaluates them against the study's context and highlights their value to the overarching research objective. It focuses on identifying key authors and influential debates concerning models of human motivation, performance and experience in the context of mobile business. For this purpose, theories and frameworks are mainly consulted from the major areas of business, technology and human cognitive psychology (see Figure 2.1).

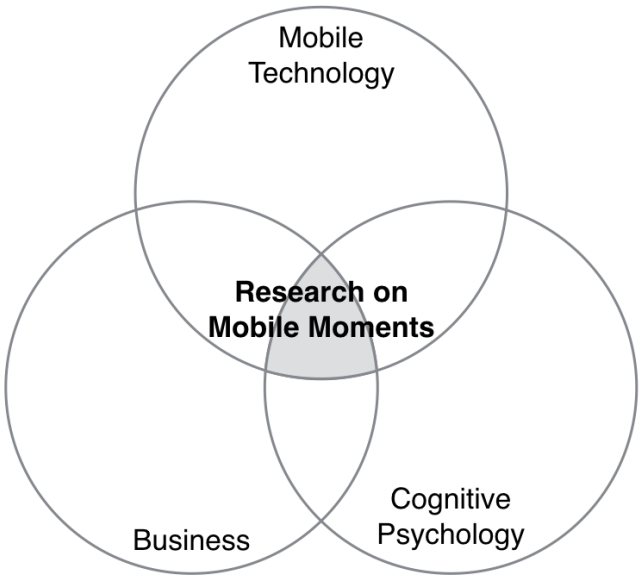

Figure 2.1: Research areas and framework (Source: Author).

2.1 Organisational setting

Starting with elaborating the research context, the first part of the theoretical foundation focuses on the identification of the current organisational needs and gaps, as shown in Figure 2.2. This remains in relation to the underpinning research process introduced in Section 1.6.

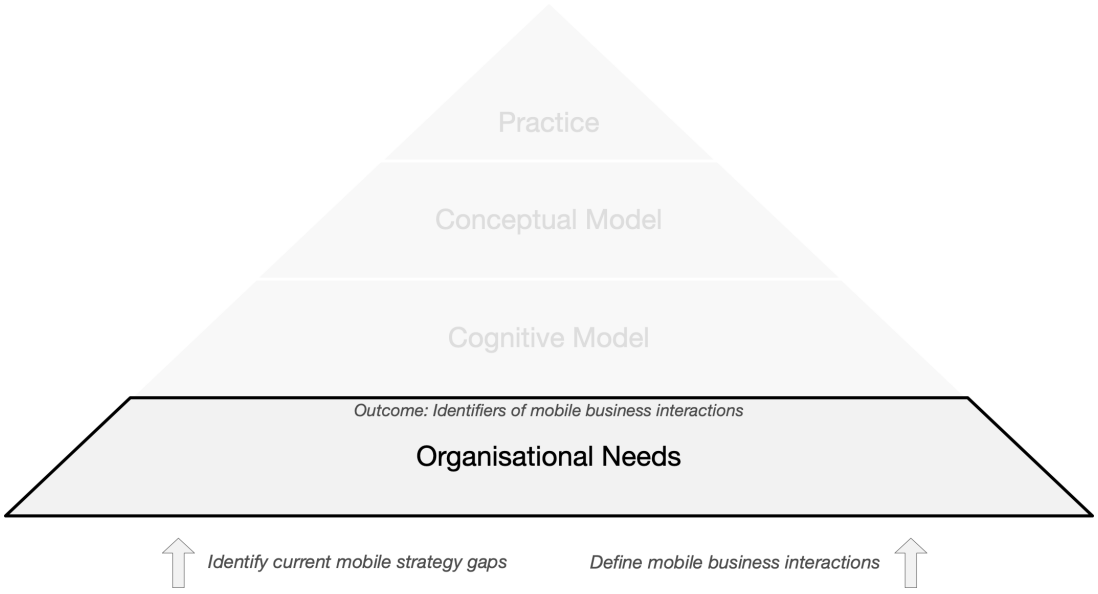

Figure 2.2: The underpinning research process: Organisational Needs (Source: Author).

Within the overall business context, one example of a continuous relation between employees and their jobs is shown by the drivers of workforce efficiency and productivity. Both of them, as part of organisational value, are built up from the sum of individual performance (Borman et al., 2003). In this context, individual performance is difficult to grasp, since in most research it is measured based on its impact on a broader team or workforce. Hereby Sonnentag (2003) suggests a characterisation of performance management within those teams based on three interdependent dimensions: (1) Controllability of performance indicator, (2) goal attainability and (3) feedback informativeness.
They are especially taken into account in order to define performance indicators, to be used as quantification of rewards eligibility and comparable measurement. Again, they are always considered as part of a broader team but nevertheless, the applicability of the three dimensions refers back to the individual's perspective. Hereby the perception

of comprehension is key to identifying potential performance indicators. The employee (1) is in charge to control his indicators and the related rewards, (2) knows about the performance targets or ranges and (3) is constantly in the loop on feedback and personal status (Sonnentag, 2003). Within these characteristics of individual performance, the employee's skill in adapting to new contextual and environmental settings, is known as one of the measurable factors against time and effectiveness (Charbonnier-Voirin and Roussel, 2012). Adaptive performance values the ability to adapt various drivers, which, as part of this research, will be considered in the appliance of mobile business. The upcoming sections further describe the psychological views on individual performance and goals, but in a strategic context which already establishes some expectations on the intended conceptual model of the research. Understanding the main relation that individual performance is about building up the workforce performance, becomes the guideline in defining Mobile Moments: provide an understanding of how they work in relation to individuals' mindsets and efficiency (to suggest controllability), generalise it into the sphere of mobile business (to identify specific targets) and incorporate the appliance into future mobile strategies (to evaluate and iterate).

Borman et al. (2003) define the related characteristics of productivity and efficiency, stating that "those employees or components of an organization that produce more of the behaviours that are strongly tied to the goals of the organization will be more productive" as well as "those employees or components that can produce those behaviours with less input (e.g., time, money, materials)"(Borman et al., 2003, p. 93). Especially the second part, in terms of less input and the paradigm of time, is one of the major assumptions of the given theme of study. It represents a major factor in understanding the potentials of mobile technological support for an employee's individual share within the organisational value.
Based on the idea that technology should "be a support rather than a hindrance for work" (Vartiainen, 2006, p. 6) time is a useful tool with which to understand an individual's efficiency when achieving a personal objective. The value of efficiency is hereby defined as the relation between an outcome and the effort invested to achieve it, in comparison to effectiveness, which describes the quality of the outcome itself (Mouzas, 2006). Effort, as part of organisational value, is often described by the value of time, which as a resource itself, is usually perceived as supremely scarce. Underlining the importance of time in modern societies and business, is the scarcity hypothesis, "one placed the greatest subjective value on those things that are in relatively short supply" (Inglehart, 2004, p. 8), already proposes the appreciation of the resource to understanding the relations.

As already stated, time is not the only influencing factor of productivity, it is nevertheless, one of those which is shared among cognitive concepts. Influential variables, which are extensively driven by or having a relation to time, are often associated with commitment, motivation, efficiency and conviction (Jones et al., 1991). One of the underpinning themes of organisational value is therefore grounded in employees' efficient use of their time. This refers back to the earlier definition of individual performance, suggesting that the employee optimises his working time by using immediate mobile interactions and potential satisfactory motivators, as further described in Section 2.9. The cognitive point of view, as a primary objective of research, focuses on the psychological dependencies in the matter of using mobile technology as a supportive and beneficial system within a business world characterised by a shortage of time and pressure in delivery.

2.2 Business context

In order to frame the research's targeted context appropriately, definitions within the business area should not be missed. The thesis focuses on employees' Mobile Moments, the technology used and its subject of motivation and performance in the work environment. Therefore the organisational point of view refers to business-to-employee (B2E) scenarios even though the actual research approaches the topic the other way around, understanding the employee as an influencing driver to business (analogously: "employee-to-business", E2B). Nevertheless, the art of investigation is to keep referring to the typography of B2E scenarios. A definition from a technical point of view can be found in describing B2E as the entrepreneurial standpoint to "exploit mobile, wireless, and telecommuting trends for external access [to internal information] by employees" (Sims et al., 2006, p. 8). This aligns with one of the research's aim to understand human characteristics in interacting with those technologies. This is especially true when the knowledge about this technology comes from a consumer point of view and is going to be transferred into B2E scenarios.

With acknowledgement of the influential value of different workforce, employee and technological characteristics due to corporate and employee geography, governance and society, the research primarily focuses on mobile workforces in western economies. This enables the research to deeply investigate the topic defined by contextual boundaries with a matured body of knowledge and practical experience but also tenders a further extension in relation to other economies.

As the research title suggests, mobile workforce performance and potentials for competitive advantage by the extended understanding of Mobile Moments provide the overall context. The research follows a route through different steps and elaborates on various

concepts, all sharing the same research aim as defined in the earlier Section 1.7.1. First coming from a business perspective, providing a starting point of where to address and locate the overall intentions. Understanding current interactions gives an insight into the occurrence of mobile technology in today's business, while elaborating on the background and impact from an organisational and cognitive perspective. It illustrates the relations between individuality, motivation and performance, and puts it into context using their influencing factors of a shared workforce performance.
The further understanding of the driving factors of individual mobile experience, by cognitive or psychological models and theories, suggest the step into practice-oriented models, while never losing touch of the business context as part of a mobile employee's setup. The overall model of Mobile Moments relies on taking the foundations and gaps from existing mobile interactions, understanding their major theoretical reasons and related cognitive characteristics, while aiming for an enhanced concept to improve the usage of mobile technology in business.
In summary, the research resides in the field of western mobile workforces, targeting usage of mobile technology not as a replacement of back office infrastructure but rather the enablement of new, innovative (=mobile-only) scenarios to support their mobile employee engaged in their daily work. The effort necessary to take the step from a developed theoretical model into the actual mobile practice is hereby considered as a mandate to consultancy business. The enablement of the conceptual model of Mobile Moments (see Section 5.1) resides as part of mobile strategy consultancy to provide guidance and suggestions on given and client specific workforce scenarios.

2.3 Mobile strategy and consultancy

Considering the research title and the aim to enhance mobile strategy consultancy, the appliance of the intended conceptual model of Mobile Moments occurs in a context changing rapidly. Nicol (2013) identifies the major differentiation for mobile strategies compared to former mindsets:

> A mobile strategy must be an ongoing process that constantly adjusts and grows over time [...] while enabling underlying elements to adjust as the market changes and matures. As a result, a mobile strategy framework must be structured in a way that is comprehensive but flexible. [...] The framework should be flexible enough to allow for new innovation and technology changes when needed (Nicol, 2013, p. 13).

Although there have been many changes in mobile technology since 2013, the concept and challenges mostly remain the same: Keep up with the newest technology and consider the overall consumerisation of IT. The latter one, especially, forces mobile

strategies to be flexible and individualistic in terms of technologies and behaviours expected by targeted employees (Wächter, 2016). Jarrahi et al. (2017) highlight the positive contribution of consumerisation to employee performance by increasing satisfaction, flexibility and mobility. Hereby individuality is a key factor which relates to the concept of Mobile Moments and drives the associated individual performance, respectively the workforce performance as described in Section 2.1.
At the same time, potential risks of additional security leaks and data privacy, compared to company-owned technologies and service, has to be considered within a mobile strategy with equal importance (Jarrahi et al., 2017). The ethical discussion on work-life balance has been left out at this point intentionally (see Section 2.5).
To become a mobile enterprise, @hand Corporation (2018) suggest a consideration of the aspects, challenges and thoughts as summarised in Figure 2.3. It is necessary to mention, that the shown buzz words are not striving for completeness and general applicability. However, the figure gives a short overview of the variety and complexity of the terminology of mobile enterprises and potential associated strategies. Areas of security, user experience, architecture and business transformation are only a few of the aims and targets of a flexible mobile strategy.

Figure 2.3: A mobile enterprise vision (@hand Corporation, 2018).

Various consultancy models and strategy frameworks are targeting their client's organisational demand to become a mobile enterprise based on the continuous challenge between user- and enterprise-oriented approaches. However, this challenge is also the main topic to address, in terms of generating business value by combining the value proposition of a project and the user's task performance (Nicol, 2013). The evaluation and characterisation of both aspects needs to transform and mature dynamically, depending on the individual's expectations and business opportunities. Nicol (2013) also outlines the *requirements and aspects of an integrated mobile strategy*, which includes an opportunity definition, business value evaluation, execution planning, mobile development strategy, device and security management and a related business strategy.

All of these need to be addressed by a mobile strategy framework. Hereby a consultancy framework might include different models to target the aspects individually, but in the end, all of them need to follow the same direction: Whatever you are doing, do mobile first! (Wroblewski, 2013, Niklas, 2014). Although the statement of Eric Schmidt, former CEO of Google LLC, was published in 2011, the idea still remains the same in current strategy and consultancy frameworks. IBM Corporation (2018d) even defines one of its consultancy strategies "IBM MobileFirst Strategy" to underline the mobile advancement. Similarly, other large consultancies like Accenture, Deloitte, Capgemini, Ernst & Young, SAP, Salesforce and others are focusing on putting mobile technologies and services up front within their digital consultancy strategies (Poulfelt et al., 2017). Although mobility is only one part of digital strategy, it usually impacts several other areas due to the focus on employee's interactions, consumer targets and market drivers as already mentioned in Section 1.5.

IBM Digital Reinvention

One particular example, and later used case study (see Section 4.7), the "IBM Digital Reinvention" strategy (IBM Corporation, 2018c) will be introduced. As a note, the underpinning aim is not limited to nor suggesting the use of IBM's framework instead of any other, however it offers a potential usecase to apply the outcomes of the given research into an actual and established strategy framework.

The IBM Digital Reinvention strategy includes several aspects in the client's digitalisation process. Without going into too much detail, mobility and mobile services are considered as a necessity in modern digital strategies. In combination with the IBM terminology of cognitive, analytics, internet of things, security and social it describes the current viewpoints on employees' experiences.

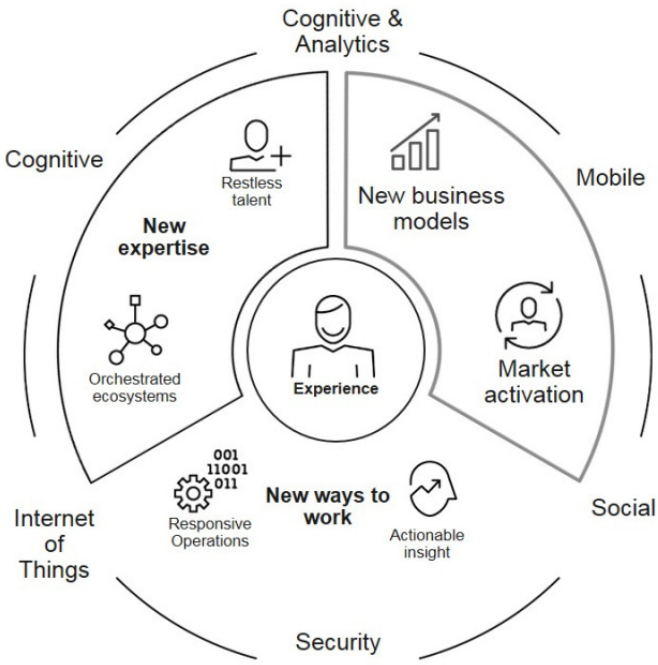

Figure 2.4: IBM's Digital Reinvention framework (Skordby, 2016).

As a baseline, the IBM Digital Reinvention strategy (see Figure 2.4) includes and highlights mobile as one of the fundamental parts in the context. Below the surface, market activation and new business models are targeted via a mobile engagement model following an iterative and user-centric approach, as defined by Still and Crane (2017), deeply integrated into Enterprise Design Thinking by IBM (IBM Corporation, 2018a):

Understand client's business goals and opportunities - Engage

Promote cutting-edge mobile technology - Scope

Define a client-specific mobile strategy - Agree

Implement mobile initiatives - Deliver

Evolve and optimise the digital journey - Advise

In reference to the earlier introduced requirements and aspects of an integrated mobile strategy by Nicol (2013), the engagement model aligns using the following relations: *Engage* in terms of opportunity definition, *scope* and evaluate the business value, *agree* on execution planning, *deliver* using mobile development strategies and *advise* the consecutive business strategy and next steps. Taking this as an exemplary mobile strategy, the given research aims for a generic model. However the IBM Digital Reinvention will later be used as a potential case of application for the developed model (see Section 4.7).

2.4 Mobile business interaction

Generalising the earlier sections, an initial thesaurus of mobile technology as a supportive system in people's life already suggests further understanding of the relation and interactions between technology and its surroundings. The combination of technology and context of business interactions forms the initial scope towards the major theme of Mobile Moments within this study. It also describes the current gap in theory, where this linkage is not yet fully established, as discussed and outlined by the upcoming sections. In that sense and in order to target the expectation of a supportive system, technology itself needs to aim to be available and usable whenever, wherever and [purpose related] whatever as requested by the employee to fulfil his duties: "Be a support rather than a hindrance for work" (Vartiainen, 2006, p. 6).
Whilst this complements the mobile part of the definition, a business interaction has been described by Czarnecki (2016) as "an arrangement, contract, or communication between an enterprise and one or more other entities such as individuals and organizations (or parts of organizations). Interactions take on the form of requests, responses, and notifications." This definition is also subject to further discussion later on, when it comes to the actual practice of mobile interactions. It, nevertheless, provides a common theoretical input to advance the contextual foundation. The major statement of [business] mobility refines it to the requirement of business interactions being available whenever, wherever and for whatever purpose feasible.
A business interaction within this study can therefore be seen as the active business value of an employee's activity or input within the business context. By this, it naturally comes back to the point of an individual's performance while executing those business interactions and being part of the workforce's organisational value.

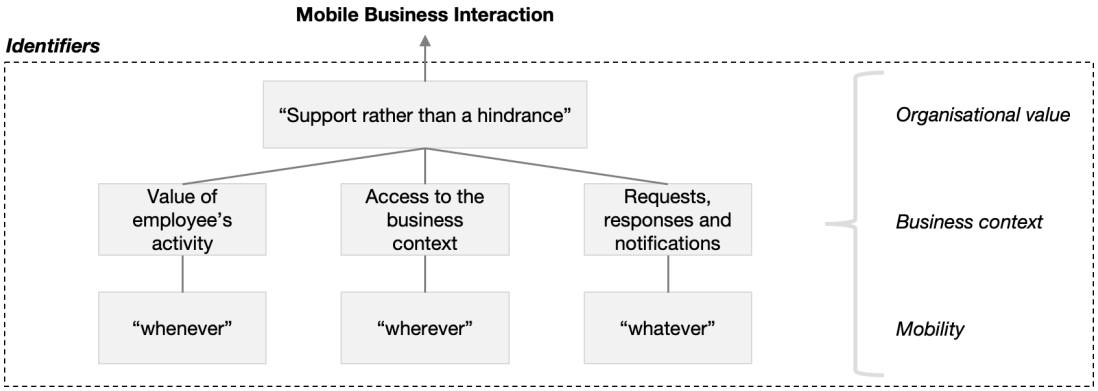

Figure 2.5: Definition of a Mobile Business Interaction (Note: Derived from Czarnecki (2016)).

As an important milestone, Figure 2.5 applies the definition of a mobile business interaction by Czarnecki (2016) into the research's context. Based on the concept of being able to interact (request, response, notify) with organisational value whenever, wherever and whatever needed to support the employee during his work. This categorisation also provides the tools to identify a mobile business interaction, and will be further called the "identifiers" of Mobile Moments. Stating this, the following sections link together and aim to further understand the facilitators of making mobility and Mobile Moments a "support rather than a hindrance" (Vartiainen, 2006, p. 6).
For this purpose, the appreciation of human cognitive factors, in order to create simple and supportive mobile business interactions, has been identified as an important but currently neglected facilitator in theory. The definition of Mobile Moments targets this knowledge gap and provides detailed suggestions on which cognitive factors should be considered when designing mobile business interactions (see Section 2.5).

2.5 Disciplines of Mobile Moments

A commonly experienced shortage of time and strengthening of pressure in work environments is often discussed from a sceptical viewpoint regarding technology (Amabile et al., 2002, Golden and Figart, 2013). However, the topic is far more historic and generic, as Garhammer (2002, p. 15) states: "Calculating one's time accelerates all activities and becomes the guiding principle for a society commanded by money".
He also differs between two approaches on how to handle this phenomena of increasing pace of life and the associated requirement to use the given time more efficiently.

On the one hand, individuals could spend less time on a particular activity, such as sleeping less. On the other hand, more activities could be fitted into one shared timeframe, which means executing multiple actions simultaneously (Garhammer, 2002). Neglecting the ethical desirability of the approaches, especially the latter concept to run activities in parallel is tangled and addressed by the means of Mobile Moments.

The concept of Mobile Moments, as defined by McClean and Shields (2015, p. 3) as "a point in time and space when someone pulls out a mobile device to immediately get what he or she wants, in context", helps to identify disciplines, models and important literature across the areas mobile technology and human-centric business interactions. The definition of Mobile Moments can be split into two disciplines: One refers to the influential technical topics, such as the characteristics of mobility as key driver for actual implementations. Assumptions and visions of technological 24-7 availability are framing the current state-of-the-art and pinpoint the rationale in terms of realistic potentials and forecasts. The technological viewpoint and associated literature also illustrate the capacity of potential transport mediums and connectivity. These are also part of mobile business-to-employee usecases and highlight the relation and dependency on technological trends as well as common end-user (consumer) experiences from mobile IT-enabled sectors (Malik and Rowley, 2015, p. 17).
The other discipline tailors the Mobile Moment definition into "[...]immediately get what he or she wants" (McClean and Shields, 2015, p. 3). What are the involved triggers of behaviour and especially what are the foundations of immediate motivation at an explicit point of time, even if it is not related to a current activity? These are the questions to be asked in order to understand an employee's motivational model (Steel and König, 2006).
First, from the perspective of an organisational expectation and performance, but second, even more compelling, comes from the human setting. The extraction of underpinning cognitive models opens up an advanced understanding of individual's demands, needs and expectations required to fulfil his immediate desire for a [business] interaction. The research, therefore, uses and discusses psychological knowledge of human cognition and motivational behaviour to highlight the triggers of an individual's Mobile Moments as a key guidance for their technical appliance.

Bringing in organisational expectation and performance, as well as the combination with an individual's geographical, sociological and structural factors, the research opens up the contextual setting of a Mobile Moment. Taking into account the characterised shortage of time and pressure in delivery (see Section 2.1), the organisational characteristic of workforce performance is a key value for an effective bilateral relationship between employer and employee (Carton, 2006, Stone and Deadrick, 2015).

The source of the initial definition of Mobile Moments by McClean and Shields (2015), as a journal article concerning security challenges, not only underlines the rising importance of the paradigm but also reflects the still missing acknowledgment within broader and contemporary literature. A generic and abstract definition is missing within cognitive-entrepreneurial research. Thus in the following:

> *A Mobile Moment is defined as a situation, in which a human being is in spontaneous need of immediate interaction with information independent of his current location, time and/or task.*

Complementing the definition of Mobile Moments at work, it conceptualises the shift of mobile business and the aim of mobile interactions in terms of (1) access information whenever needed, (2) promote context-related styles of interactions wherever appropriate and (3) provide illustrations of whatever is currently useful to the user. The underpinning philosophical statement represents employee's interaction as a highly integrative process. Mentioning the term "integration", the latest revision of the famous buzz words in business "work-life balance" to "work-life integration" (Douglas, 2014) illustrates the early perception of an important game changer. Mobile Moments approach this aim of integration by highlighting the importance of understanding the human cognition to meet the (un-)conscious expectation of the mentioned paradigms of whenever, wherever and whatever. This naturally blurs the line between business and private spaces. Even though this statement provokes a lot of controversy and is ethically sensitive, the research on the cognitive foundations within the definition of the Mobile Moments should be seen as a prominent driver for employee's individuality, freedom in work and aligned motivational attitude. In fact ethical scepticism and a strategical gap of transforming modern businesses by bringing in mobile technology is an ongoing innovative challenge (Ciaramitaro, 2011, Palmer, 2015). It demands extensive involvement of human-centric knowledge to integrate mobility as a deeply anchored part within workforce models aligned successfully to corporate vision's enablements.

2.6 Mobility and information

In contrast to the fairly new concept of Mobile Moments, mobility and mobile technology as such, is already a far more elaborated and broader sphere of knowledge. However it should be stated that mobile technology as a representation of mobile devices in literature is hard to grasp: it is changing and evolving at a pace, which is very challenging for ongoing research (Halfpenny and Procter, 2015). Devices like smartphones, wearables, tablets, etc., can be the state of art in one moment and be old fashioned in a

second (Reeves et al., 2015). Most of the time, the underpinning abstract concepts remain, although the actual technological tool is changing (Topi and Tucker, 2014). In the given research, the abstraction is also primarily used, instead of focusing on the currently available technology landscape. It forms the literary foundation of major technological enablers, while striving for innovative and supportive ways of mobile business interactions.

With mobility as a strategic and abstract concept of interaction in work environments, a reasonable starting point can be found as "the mobility trend has been gaining momentum since the launch of laptops, which enabled people to work while on the move" (Sathyan et al., 2012, p. 90). Today's understanding of enterprise mobility relies on the developments in data mobility, which enhances "on the move" scenarios to "on the move while connected" (Nielsen, 2014, Sathyan et al., 2012, p. 91). The associated technological dependencies complement the extended definition as mobile technology "is defined as any technology that is portable and uses wireless connectivity" (Gleason, 2015, p. 2). Due to the fact that Gleason (2015) refers to the area of notebooks and smartphones as primary mobile technology, this research extends the definition intentionally to any technology that is portable and uses wireless connectivity *with the aim to interact with information* (Wilken and Goggin, 2013).

By this, connected data-oriented devices, such as industry sensors and reporting devices, are explicitly excluded in this research and mobile technologies represent only those devices, which have a direct relationship to the user and process humanly-understandable information. The key to this definition lies in the fundamental difference between data and information: The term data represents an unstructured set of unrelated and meaningless pieces or chunks. In contrast, information provides structured and semantic value, which is represented as a piece of knowledge (McBride and Schmorrow, 2005, Gardner et al., 1998, p. 28). Information can therefore be seen as something changing the recipient's cognitive state by extending or altering existing knowledge. The value of information in relation to analytical or contextual computerisation as well as the selection, framing and usage of adequate transport media (technology) is a constant and relevant topic from different viewpoints (Orlikowski and Gash, 1994, Horton and Edwards, 2016). In the following chapters, the cognitive lens on adequateness of information will especially be considered, due to its relevance within human perception models (see Section 2.7). Referring back to the purpose of a mobile business interaction (see Section 2.4), its motivation extends the exchange of information between one or more other entities, human or system actors, with the aim to generate business value from human performance.

2.7 Cognitive setup

In order to link and relate the spheres of business oriented definitions to cognitive motivation and performance, psychological models help to understand foundational processes to perceive information and perform an action. Figure 2.6 illustrates the next important stage within the research process. The following sections provide an understanding of the human cognitive setup and the related "drivers" of Mobile Moments. For this purpose, important concepts of motivation and performance are put into relation and connected to the earlier definition of a mobile business interaction (see Section 2.4).

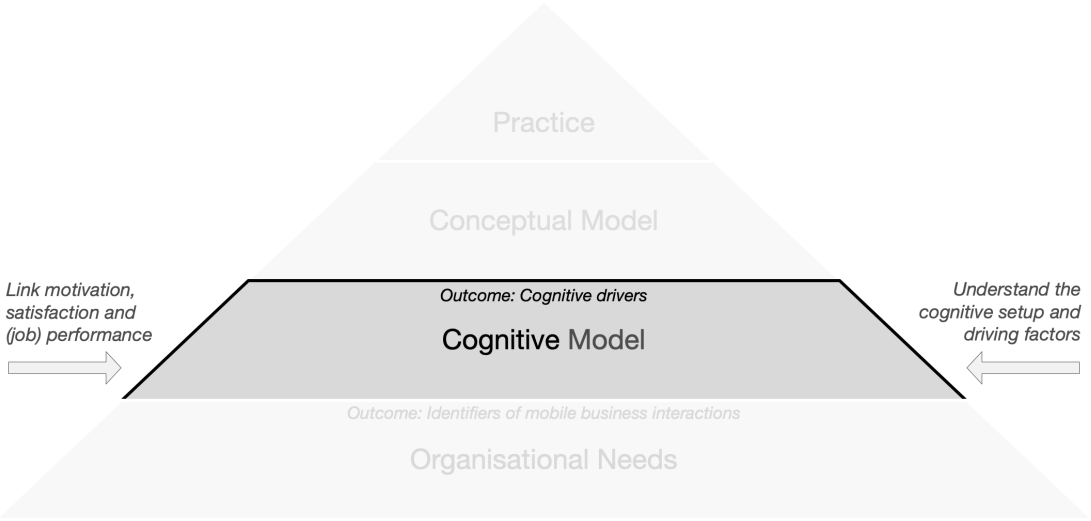

Figure 2.6: The underpinning research process: Cognitive Model (Source: Author).

To better understand the background of the upcoming models, differences between conscious and unconscious cognitive initiators should be mentioned: Both of them result in an actual behaviour either by willingness (conscious) to perform an action or by an "automatic" reaction (unconscious) to environmental indicators (Gero and Hanna, 2015). One of the earliest findings in cognitive research on human information processing, have been attributed to the American psychologist Saul Sternberg (Farnham-Diggory, 1992). His early study on "The discovery of processing stages" in 1969 (Sternberg, 1969) deals with the act of perception and influenced, and is still considerably influencing, further work on the topic (Baddeley, 1997).
The so called "Sternberg Paradigm" (see Fig. 2.7) identifies time and data dependent stages of information processing from sensing stimuli into stimulus coding, through serial comparison, passing (un-)conscious decision making, followed by planning of the (re-)action and finally performing this action (Kircher and Gauggel, 2008).

Based on his historical model of cognitive representation, further research on performance in data processing, triggers of action and values of decision-making show similarities and relate to the Sternberg Paradigm in their approach (Puff, 2015). The same reference supports the identification of key characteristics understanding the individual's cognitive background of Mobile Moments.

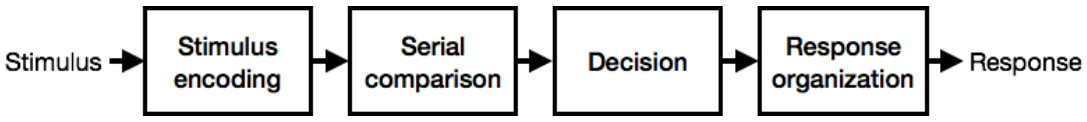

Figure 2.7: Sternberg Paradigm, 1969 (Kircher and Gauggel, 2008, p. 16).

Within the research context, at least as influential as the Sternberg Paradigm itself, are those controversies directly and indirectly associated with the model. These relations and different viewpoints align with the perception that cognitive science is not strictly a theme of study, which only relies on facts and figures, but rather is open for multiple interpretations (Puff, 2015, p. 28). Especially when it comes to the understanding of internal processes related to memory, problem solving or reasoning, cognitive science resorts to empirical outcomes of neuroscience and neurobiology. It abstracts those findings into theoretical concepts and models, reusable for the sake of qualitative knowledge.

Other main contributors to the area of cognitive science, and in relation to the theme of study, can be named by the British psychologist Alan D. Baddeley and the Canadian psychologist and computer scientist John R. Anderson. Both of them and their work on human information processing, memory (Baddeley, 1997), cognitive psychology and its implications (Anderson, 2014) form an important part in the process and comprehension of Mobile Moments as the definition of cognitive drivers in Section 2.10 further elaborates. With several empirical studies, both researchers extended the existing Sternberg paradigm with further details on capacities and data flows for information processing between the three major human memory components, which will be further elaborated in the following.

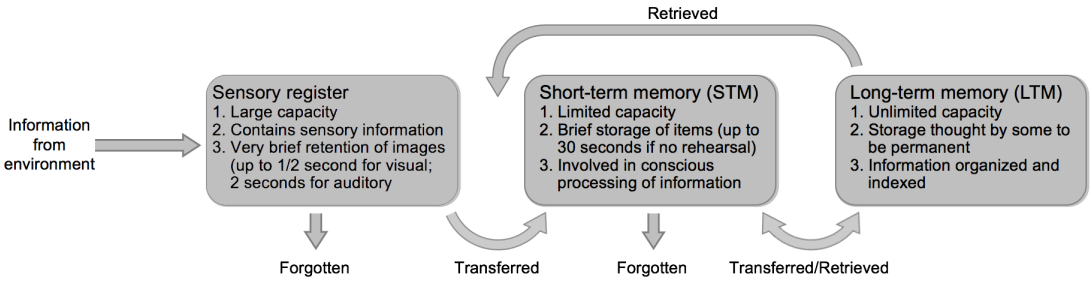

Figure 2.8: Three major human memory systems (Wade, 2010).

In relation to the Sternberg Paradigm, Baddeley and Anderson illustrate a further abstract layer below the four stages of information processing. In that manner, they further elaborate the memory systems involved to provide the activities defined by Sternberg's stages. Connecting Figures 2.7 and 2.8, stimulus encoding is defined as an activity mostly processed by the sensory register. The short-term memory (also: working memory) acts as a central processor for serial comparison with information retrieved from the long-term memory. It is also involved in conscious decision-making and response organisation, as Baddeley (2002) suggests, which results in the conclusive response to a stimulus.

2.7.1 Sensory buffer

The sensory buffer (or iconic memory) as seen in Fig. 2.8, represents a short temporary cache. In fact, it is able to cache an enormous amount of sensory data for a brief period of time in order to allow further limited memory systems to process valuable information out of the sensory data (Corbetta and Shulman, 2002). It plays an important role in the concept of perceptual attention, to quickly decide, which sensory data are going to be further processed by the working memory, which also is applicable for training and focus. The model advocates no differentiation between the kind of sensory input. Often it is also a combination of multiple types namely visual, auditive and haptic data, which make up the perceptual experience. Studies also propose the statement that the sensory buffer is able to cache visual data for about a half a second, and auditory data even for up to two seconds before they will be dismissed (Anderson, 2014). The cache of visuals especially helps to further understand the difference between perceiving images in comparison to texts as part of Mobile Moments later on.

2.7.2 Working memory

The central activity in the "making sense" process of perception is handled by the working memory. It is described by two abstract cognitive components: As illustrated

in Fig. 2.8, it represents the interaction between the short-term memory (STM) and long-term memory (LTM). Similar to the sensory buffer, the STM provides a temporary data cache for up to 30 seconds, until information is mapped to the episodical LTM or dismissed conclusively (Sprenger, 1999). The required perceptive processing to map data to the human's knowledge or mind is also mostly driven by the working memory model. Sensory data will be encoded, memorised and compared to existing mental models and patterns [from LTM], which represent the key activities in the decision-making process and also refer to the earlier mentioned stages of the Sternberg paradigm. Without going into too much detail on the neurobiological background of the models, work and studies of (Baddeley, 2002, Zimbardo and Gerrig, 2008, Anderson, 2014, Wade, 2010) highlight the importance of the working memory model in all cases of perception and cognition-oriented theories.

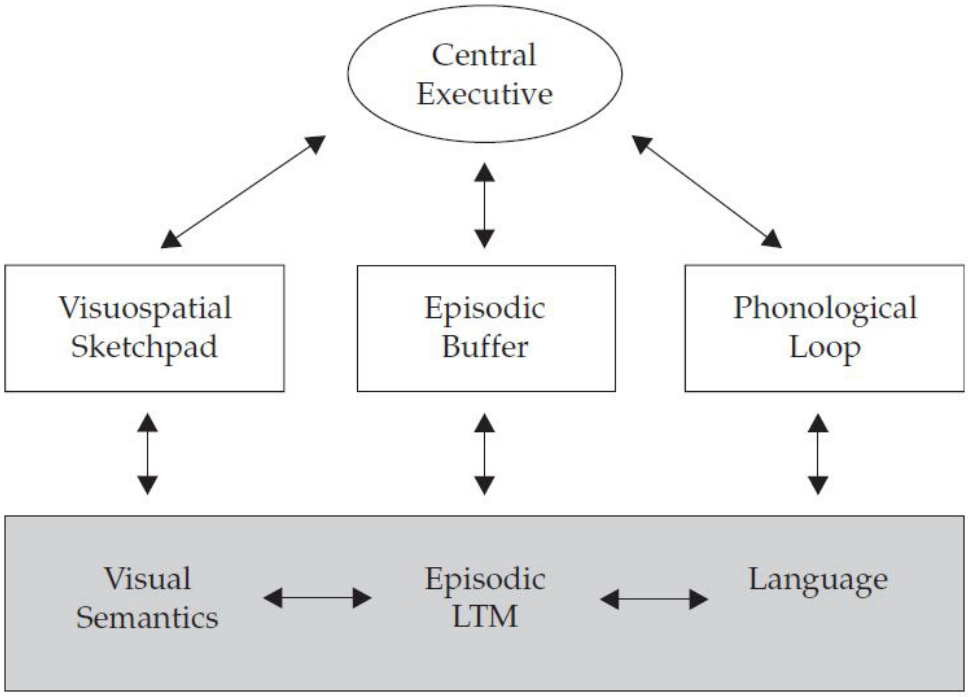

Figure 2.9: Alan D. Baddeley's current model of working memory (Baddeley, 2002).

Figure 2.9 illustrates the working memory in more detail. The *visuospatial sketchpad*, *episodic buffer* and *phonological loop* further distinguish the different kind of memory caches and show the direct interaction with the *central executive* as major processing instance.

The *episodic LTM* refers to the long-term memory, which already holds existing mental models and patterns for comparative activities. The parallel data flow of phonological

and spatial processing continues the earlier mentioned difference in perceiving syntactical/phonological and visual(mostly)/figurative information from the sensory buffer (Eysenck and Brysbaert, 2018). Both of them are key in understanding, how to build up, extend and maintain mental models, memory and knowledge.
The working memory is able to memorise, compare and chunk large visual information into related models and syntax semantically. This visual perception process is primarily adequate for understanding overarching models and for comprehension of a "big picture" (Zimbardo and Gerrig, 2008). It also plays an important role in attentive triggers, allowing the identification of sensory data based on the recipient's current attention (Monsell and Driver, 2000).
In comparison, serial information, such as phonological or episodical information from text and language, are primarily known for constructing detailed and specific information. It builds up semantics from already adopted syntactic knowledge. It primarily describes the process of detailed understanding and comprehension (Eysenck and Brysbaert, 2018).
Both types of perception rely on a two-way reciprocal process between already existing mental models [from LTM] and new information [from sensory buffer]. The individual characteristics of these processes are also known as a key driver for learning, performance and adaption capabilities (Baddeley, 2002, Anderson, 2014).

2.8 Performance and satisfaction

The cognitive lens on an individual's performance (see definition in 2.1) also evokes human resources and management-oriented sciences to further investigate the perceptual activities, while especially focusing on an employee's performance as part of the workforce. Dalal et al. (2014) suggest a reasonable categorisation of cognitive-oriented or "within-person" theories on job performance distinguished by their emphasis on ability and motivation: (1) Theories emphasising the role of ability including knowledge and skill, (2) theories strictly focusing on the value of motivation and (3) theories highlighting the relationship between ability and motivation (Dalal et al., 2014).
With recognition of ability and motivation as key drivers in job performance, the underpinning theories also, respectively, have a comprehensive impact on the understanding and practice of enabling Mobile Moments in work relations (Krishnaveni, 2008, Bose, 2012). Therefore the following section aims to provide further details on performance itself, and also highlights the relation to satisfaction through ability and motivation.

Performance is already considered one of the most important values in workforce capacity (Dalal et al., 2014). In this particular case of performance, associated with the

term job performance, the definition aligns strongly with key concepts of organisational effectiveness and expectations (Korschun et al., 2014).
Job performance is "the extent to which an employee contributes to organizational effectiveness given the expectations associated with his/her work role." (Zablah et al., 2012, p. 22). Even though this definition emerges from a more behaviouristic and objectivistic research approach, illustrated by the path of argumentation in Zablah et al. (2012), it nevertheless points to the interesting direction of the employee's contribution to a shared organisational goal. From a more interpretive perspective and in order to better understand the models engaged, this part of the definition is key in addressing an individual's job performance. Similar to French (2011), Dalal et al. (2014, p. 1402) define job performance as "a function of ability and motivation, with ability representing the capacity to perform and motivation representing the willingness to perform".

In relation to effectiveness, performance and behaviour, there are already some theoretical concepts stimulating the organisational demand on job performance. The function of an individual's motivation, skill and ability on a specific task at work sounds feasible in the first place. But, on second thought, it also raises concerns regarding potential gaps in its integrity reasoned by the lack of involvement of human characteristics such as attitudes, personality and mostly missing empirical arguments on the factor of job satisfaction (Sharma, 1986, Sonnentag, 2003).
Bridging the context to mobile technology and development, those characteristics also illustrate a major part of the user-centred design model developed in the field of human computer interaction (ENISO, 2006, Still and Crane, 2017). The model includes theories of cognition but, even more influential on performance, it introduces a concept and guidelines for "usability". It highlights usability as a concept built up from three factors of effectiveness, efficiency and the so called joy of use (Kurosu, 2009). Hereby effectiveness and efficiency represent two factors of the common understanding of goal achievements and the resources (effort) expended accordingly (see definition in Section 2.1). Nonetheless, it is especially the third factor, joy of use, describing a highly subjective experience, which is defined by the occurrence of positive attitudes towards the usage of a product (Booth, 2014). It represents a concept to be transferred into the area of job performance with the aim of addressing the gap of missing involvement of an individual's perceptive and emotional characteristics.
Kurosu (2009) continues and further describes satisfaction or joy of use as an absence of discomfort during the use of a supporting [technical] product. This represents the concept, in which earlier studies propose the empirical value of joy while interacting with an explicit product, gadget or tool. An individual's grasp of perceived usefulness and joy have also been shown to impact the frequency and duration using supportive

tools, which additionally inherits these factors as part of intrinsic motivation (Igbaria et al., 1994, Kanji, 2012, Thomas, 2009).
As mentioned earlier, the linkage between joy of use in the context of job performance is rarely established in the current literature. Nevertheless a bridging factor can be found in terms of motivation, since there are separate correlations between joy of use and motivation, in the same manner as motivation and job performance have been documented comprehensively. Schiffler (2012) describes those heuristics as joyful interactions and emotional usability, which characterise emotional factors and needs beyond objective functions.

With the concept of subjective influencing factors, the cognitive perspective on joy of use and motivation comes into account again. Joy of use, or in more abstract words, the appreciation of positive attitudes during interaction with an external object, includes the fairly emotional aspect of joy itself (Kurosu, 2018). The interdependency between cognition and emotion has already been raised in the literature from different point of views (De Houwer and Hermans, 2010). In most cases, a prominent statement precedes the discussions, asserting that emotion is a topic hard to grasp. Compared to motivation or attention, emotion more likely describes a less homogeneous category in terms of its undefined motives or outcomes (Spaulding and Simon, 1994). The same source nevertheless continues with the proposal, that emotion is often seen as a source of motivation, which closes the loop back to the earlier depiction of the joy of use as an influencing factor in job performance.

Understanding the individual relations between several factors of motivation and performance, the combination of all illustrates the complexity and interdependency on each other.
According to Gagne and Fleishman (1959), almost any sort of human performance can be improved by an increase in motivation. In other literature it is even defined as a proportional model, that job performance is a function of skill level multiplied by motivation and interacting with the worker's ability to perform (Sharma, 1986). This relational model forms the research's underpinning assumption, where motivation is a key driver for an individual's performance at work. Understanding and adapting the characteristics of motivation, therefore, has direct impact on the employee's work behaviour within a workforce. The various characteristics across this relation (performance, ability, motivation, usability, satisfaction, emotion) are considered as part of the given research and will further be investigated from the perspective of mobile technological drivers and enablers in work scenarios.

2.9 Cognitive motivation

In the earlier sections motivation has already been established as an important, or even one of the most important drivers of performance. In the following section, a further elaboration of the different characteristics of motivation and triggers within business environments underlines its impact on the appliance of Mobile Moments. As Herzberg et al. (2011, p. 134) suggests, "the jobs themselves have to be set up in such a way that, interested or not, the individual who carries them out can find that their operations lead to increased motivation".
Motivation is already a subject that has widely gained interest because of its relation to performance while understanding the terms of human behaviour and actions. Striving for a better understanding of motivation also relates to fundamental models and ideas of humanistic behaviourism. Still eminent in modern discussions, some of them go back to initial theories of human motivation, such as Maslow (1943), and are known as a broad research topic on their own.
In terms of the given research, especially motivation in the workplace is something which is pursued and investigated, not only by researchers, but also by practitioners and strategists. In the literature, there are two major studies for approaching the concept of business motivation and these are mentioned for further comprehension:
The first one employs cognitive models, which emphasise the role of thought processes, while the second one investigates non-cognitive paradigms with a focus on personality, characteristics and environmental factors (Kurose, 2013). Slightly more abstract, it is the differentiation between cognitive-based motivation and need-based motivation (Barnet and Simmering, 2015). The differences and commonalities are further discussed in the upcoming sections.

With the research's primary approach to understanding instead of to measuring motivation, it follows a generic definition of work motivation. Motivation is a "set of energetic forces that originate both within as well as beyond an individual's being, to initiate work-related behavior, and to determine its form, direction, intensity, and duration" (Pinder, 2014, p. 11).
In combination with the definitions of Section 2.8, the definition of motivation is therefore used as a literary connection between the energetic forces of joy of use, emotion and performance to be further conceptualised by the means of human-cognitive and psychological theories. Two important historical, but still well-reputed cognitive models of motivation were initially proposed by Victor H. Vroom and Edwin Locke in the 1960s (Hollyforde and Whiddett, 2002, Sincero, 2012) and provide an insight into the terminology.

The so called *Goal-Setting Theory* was initially introduced by Locke (1968) and has been revised and enhanced a couple of times by Locke himself and by related research in broader literature (Locke and Latham, 2013). The key statement still persists and proposes, that the concept of a "goal is seen as a motivational force, and individuals who set specific, difficult goals perform better [than others]" (Landy and Conte, 2009, p. 377). Locke (1968) propagates his underpinning premise, that people will be more motivated to attain a challenging goal successfully by three main conclusions (Hollyforde and Whiddett, 2002):
(1) More difficult goals result in higher levels of performance than easy goals. (2) Specific goals produce higher levels of performance than general goals (e.g. "Do your best!"-goals) and (3) behavioural intentions or personal aims influence the choices people make.

The sum of these statements represents the motivational force aligned with the Goal-Setting Theory. This theory is widely adopted within people management and human resources, because performance measurement in organisations is mostly measured against goals and objectives (Hollyforde and Whiddett, 2002). Common criticisms of the theory are its absence of intermediate factors, for example, the concept of goal commitment, which describes the individual's sociological or personal characteristics and beliefs in striving to achieve a particular goal (Latham, 2012). An important factor is the level of self-esteem and reflective capabilities of a person in his abilities and the subjective assessment of the difficulty of the goal.
It is especially this absence of an individual's commitment that is addressed by another important motivation-theory, which was introduced by Vroom (1964) and is called the *Expectancy Theory* (also known as VIE-Theory). This theory is based on the premise "that people expect particular actions to achieve a desired result (have 'expectancy') and that the desired result is something worth striving for or avoiding (has 'valence')" (Hollyforde and Whiddett, 2002, p. 76). It promotes the behavioural decision to select an explicit option over another in relation to the aim of achieving a particular goal. Vroom (1964) identifies three variables (VIE) to explain the process of motivational decision making:

Valence: Affective orientation towards a particular outcome, whereby the valence can be any value in the dimension from negative, when trying to avoid the outcome, to neutral, when the person feels indifferent to the result, to positive, as a statement of preference to attain the explicit outcome.

Instrumentality: Potential dependent and subsequent expectation that a particular interim outcome will lead to another additional outcome. The range of instrumentality

again represents a negative value, when a second outcome can definitely not be attained, if the first one was. It is neutral, when there is no likely relationship between these outcomes and positive, when the attainment of a second outcome is certain, if the first outcome was achieved.

Expectancy: A momentary belief about the likelihood of an outcome following a particular action. The certainty is considered to be a construct of self-efficacy about an ability, perception of goal's difficulty and consciousness of the degree of individual's performance control.

Vroom (1964) combines the three variables into a motivational force, which in this case is the product of their representative positive rational number. Even though later research supports the basic theory of valence, expectancy and instrumentality, there have been critics outlining the insufficiency of the expectancy theory. The negligence of ability and role clarity or knowledge, as additional influencing factors, has especially been criticised in the broader literature (Hollyforde and Whiddett, 2002).
Nevertheless the expectancy theory as such, as well as its critics regarding ability and knowledge, has led to further research and preconditioned the earlier mentioned categorisation of cognitive-oriented or "within-person" theories on job performance.
These categories integrate additional key concepts and are subject to further critics and dependencies (from Section 2.8: (1) Theories emphasising the role of ability, knowledge and skill, (2) theories strictly focusing on the value of motivation and (3) theories highlighting the relationship between ability and motivation).
(1) Going ahead with the idea of the influencing factor "ability" in job performance, the main model distinguishes between the "changing-task" and "changing-person/subject" relation. It proposes the idea that during a person vs. task interaction, both the abilities necessary to fulfil an existing or a new task, as well as the individual characteristics how a person learns and uses them, change over time (Sturman, 2007).
The important outcome of this theory is defined by the relation "as the abilities possessed by the employee change, so does the employee's performance" (Dalal et al., 2014, p. 1402). This statement articulates the almost exclusive focus on the employee's goal selection by abilities. It is also these kind of theories' most notable criticism, as they neither take into account a broader understanding of the task itself nor the individual's practical surroundings or organisational dependencies (Alvares and Hulin, 1972).
In contrast to ability, (2) motivation is a far more variable and subjective factor of performance. In this case, motivation can be further defined from a sociological and organisational perspective. It extends the earlier described human- and cognition-oriented theories (Expectancy and Goal-Setting) with the aim of understanding their influence on job performance.

Hereby social drivers of affect or self-regulations come into play: both inherit a more abstract description, that motivation represents an inner desire to make an effort (Dalal et al., 2014, Borman et al., 2003). Affective theories of work motivation propose the idea, that a person is exposed to two influencing processes: from within and by an external instance or person.
The inner process is subject to dynamic disruptions of an individual's sociocultural factors, activities, experiences and moods. It also emphasises the concept of momentary affective reactions to specific and sudden sociological or job-related changes (Champoux, 2010). In contrast, the external process addresses a more likely stable evaluation of an employee's work. This also includes the individual's perception, understanding and acknowledgment of job expectations and the external feedback on success or failure by a certain level of evaluator (Dalal et al., 2014, Weiss and Cropanzano, 1996).
In contrast, self-regulation theories of motivation represent the requirement of an employee's ability to manage their attention on fulfilling job requirements. Self-controlling strength is hereby defined as the capacity to modify one's own behaviour aligned with desired standards and long-term goals (Baumeister et al., 2007).
The aforementioned two-sided theory of motivation also illustrates the complexity of the term motivation itself, which is additionally the key criticism for the theory. With all the combinations of different perspectives in the literature, a definite and sophisticated theory cannot be extracted, as by all listed key authors in this area, each of them places crucial assumptions and expectancy on additional factors.
This leads to a more constructed categorised theory, which (3) establishes the idea of motivation in combination with ability. Hereby both earlier concepts (ability and motivation) construct an interdependency with the aim to provide either "typical performance" defined by organisational job expectations or, at its peak, a "maximum performance" (Dalal et al., 2014). This theory is again highly dependent on its sub-factors, but nevertheless it also represents an appropriate abstract model of job performance to be further used in the study. The key value is defined by the fact, that motivation varies across and within individuals but connects in any case with the concept of ability in order to produce job-related behaviour and performance (Borman et al., 2003, p. 225).

This is an important landmark of the given research, since both drivers of individual performance are taken forward and will be reflected by the final conceptual model of Mobile Moments in Section 5.1. It has already been mentioned that the ability (capacity to perform) and motivation (willingness to perform) is an important differentiator within the stages of the model.

2.10 Combining the concepts

The earlier sections provide multiple initial definitions and concepts from the scientific areas of psychology, technology and business. The current literature provides an enormous value in knowledge about each of the subject areas by itself and this chapter tailors them into the research area of mobile business. The following sections strive for a further illustrative and linked view on the given concepts, models and theories, resulting in the cognitive model of Mobile Moments to be taken forward.

2.10.1 Cognitive fundamentals

Together with the defined concepts of performance, motivation and ability, the traditional models of human cognition substantiate the research's psychological background. The Sternberg Paradigm for linear information processing or Alan Baddeley's abstraction of the human working memory illustrate the actual areas of mental execution (Baddeley, 2002), while perceiving information regardless of any technology or business context. Nevertheless, this knowledge advances the comprehension that cognitive performance is affected by motivation.
As mentioned earlier, the cognitive performance itself is an abstract characteristic described by the level of optimised processes in working memory and information processing, supplementing the flow of decision making (Sanada et al., 2013, Krawczyk and D'Esposito, 2013). In fact, all of these processes rely on central cognitive activities, which are triggered by environmental changes or individual creativity (Anderson, 2014) and are subject to optimisation aiming for better individual performance. Brooks and Shell (2006) define the interdependency between the ability of the working memory, which limits how well cognitive tasks can be undertaken, and the motivation, limiting how much of that ability an individual is willing to apply to a specific task: "Motivation deals with the willing portion of willing and able" (Brooks and Shell, 2006, p. 18).
A large portion of those abilities within the working memory are associated with conscious higher-order cognitive and explicit processes such as reasoning, problem solving, cognitive control, etc., (Baddeley, 2002). Current studies further investigate the working memory's potential in unconscious and implicit activities. Hassin et al. (2009, para. 6) suggest that working memory "can operate outside of conscious awareness" and postulates that those higher-order processes can also operate non-consciously. Hassin et al. (2009) further describe the potential processing of such a task in terms of (1) active maintenance of ordered information, (2) context-relevant updating of information and goal-relevant computations and (3) rapid biasing (control) of task-relevant cognitions and behaviours, in the service of currently pursued goals.

By abstracting this theory a little bit further, it is proposed that unconscious senses could trigger unintended actions. The concept might have influence on the understanding and occurrence of Mobile Moments and their predecessors. The individual's subliminal need to interact or connect with data might occur during unconscious sensory- or thought processes and result in an intuitive action, as research suggests by Gero and Hanna (2015).
A descriptive example of this is the phenomena of pulling out a mobile device unconsciously and without any explicit goal or aim. The consciousness of the subliminal action only occurs subsequently and not as an intention before or during the interaction itself. In the literature this habit is called a "checking habit", which defines a brief, repetitive inspection of dynamic content quickly accessible on the device (Oulasvirta et al., 2012). Even though Mobile Moments are not limited to such kinds of scenarios, the unconsciousness reflects an important part of the upcoming cognitive model.

2.10.2 Dependencies and relations

By the overall concept of Mobile Moments, it is possible to frame the aforementioned models, theories and frameworks into a comprehensive and interrelated framework of dependencies. This collection is able to reflect and summarise the current state of literature around the area of study appropriately. An important foundation and predecessor of the upcoming model can be found in the field of human-computer interaction. In relation to the earlier described key models and theories advancing Mobile Moment, it can also be transferred to the sphere of usability in mobile business, while only having small adaptations in its interpretations. Kurosu (2009) proposes the relationship of the following seven elements within the range of product usability (Kurosu, 2009, p. 195): "product, users, goals, effectiveness, efficiency, satisfaction and context of use".
Kurosu (2009) interprets a product as the target artefact, which will be used by someone with the main objective of enabling a specific functionality. In the context of this research, mobile technology itself is an accurate representative of the product and has been introduced as the technological enabler for mobile business. Due to this, the definition of product, has been replaced by "device", to be even more distinct within the research area and to advance it accordingly. The goal itself leverages the concept of motivational force as key statement from the Goal-Setting Theory as the individual's motivation to do his job. A well-defined and specific goal is the main requirement from an organisational point of view, as described by Hollyforde and Whiddett (2002). However, also in terms of the actual result, the employee's viewpoint is depicted by the means of the Expectancy Theory which connects with the Goal-Setting Theory.
The relationship between the product and associated goals is the major difference be-

tween the practical appliance of the targeted drivers as a concept of product usability or usability in mobile business. Kurosu (2009) unfolds a goal as the target function for the artefact or product, which is appropriate for this study's focused mobile technologies in business, representing enablers for a user to achieve his explicit job goals. The important difference within the research is, that these goals might differ between individuals and are not always strictly related to the product (=device), as technology can be applied in different ways. On the one hand it can be applied as a transport medium but also, on the other hand, as a supportive enabler or trigger. Nevertheless, the elements of product/device and goals persist as important concepts in both contexts, yet their interpretations vary.

The remaining elements defined by Kurosu (2009) are categorisable into two sub-groups: Subjects for research including users and the context of use and subjects for evaluation describing effectiveness, efficiency and satisfaction. The first one can be interpreted by means of Mobile Moments as the concept itself, which represents the involved human being with its cognitive capabilities and the environment in which they interact. Therefore, cognitive capabilities and capacities support the understanding of working memory, information processing, decision-making and explicitly the difference, value and forces between motivation and ability. The environment or context of use is touched by the concepts of (un-) conscious perception and associated actions including affective motivational theories. It describes triggers and influences for the occurrence of Mobile Moments and plays an important role while applying Mobile Moments, as described within the upcoming study.

Subjects for evaluation, which are effectiveness, efficiency and satisfaction, are closely aligned to the models of job performance. They are represented by their individual depiction for this theme of study and offer a frame for comparison and interpretation. The aforementioned guidelines of usability introduce the term called joy of use, which bears analogy to the earlier definition of satisfaction.

The overall relationship between these individual concepts among different areas form the underpinning research path according to the idea of business advancement through comprehension of Mobile Moments by their psychological, organisational and technological characteristics. The literal connection between them forms the foundation of the upcoming theory-based research questions to advance the theme of study. The given research proposes herewith a collection of seven cognitive drivers of Mobile Moments as a derivation from Kurosu's model of product usability:

(device, users, goals, effectiveness, efficiency, satisfaction, context of use)

2.11 Cognitive model of Mobile Moments

The following Figure 2.10 illustrates the cognitive model of Mobile Moments and puts it into the research context. In fact, the combined facilitators of Mobile Moments represent a sum of characteristics in order to define a supportive moment to the employee, respectively the user. The earlier sections illustrate the foundations behind every facilitator and the relation in between the seven cognitive drivers and a mobile business interaction. The interface between mobile business interactions and Mobile Moments has been identified as a supportive rather than a hindering experience. This relation underpins the importance of understanding the cognitive (supportive) expectations of the model prior to its application. The following illustration herewith combines the context, identifiers and drivers of Mobile Moments into a cognitive model. The *cognitive* aspect of the model provides an abstract view on the complex process of perception and interaction with mobile technology. Based on the theoretical models identified in Chapter 2, the cognitive model illustrates the major drivers of mobile interactions while considering a business-oriented context.

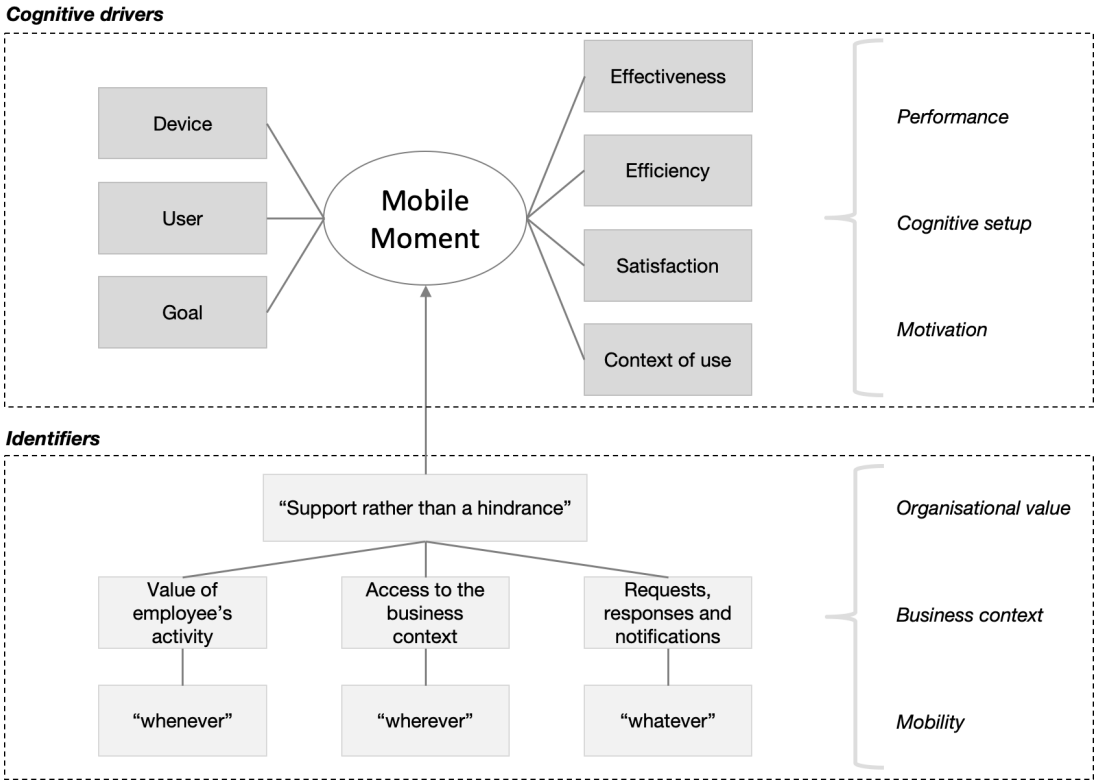

Figure 2.10: The cognitive model: Mobile Moments in relation to mobile business interactions (Source: Author).

As part of the visualisation, the keywords on the right hand side are providing the sources for the characteristics in current literature (from bottom to top).
Mobility as the broad definition of mobile and its relations (see 2.6), which is then shaped into a *business context* (see 2.2). Following the aim to produce *organisational value* from an appropriate positioning of the same (see 2.1). These three stages describe the identifiers of a mobile opportunity, whereby the following three define the cognitive drivers and concepts to characterise the opportunity as a Mobile Moment.
Motivation as a major human initiator for any action (see 2.9). The *cognitive setup* to adjust and bring in individuality (see 2.7) and the underpinning goal to have positive impact on *performance* (see 2.8). Each of the keywords, and their defined identifiers or drivers respectively, refer back to the important theories while creating the first major research artefact of Mobile Moments: "The cognitive model".
In reference to the research process introduced in Section 1.6, the major milestones in the process are the (1) identification of organisational needs, (2) setup of a cognitive model to define Mobile Moments, (3) development of a conceptual model from and within practice and (4) suggestion for the application of the same.
Figure 2.10 herewith summarises the earlier theories or models raised, merged and put into context from the literature. In detail, identifying the organisational needs is covered by the definitions of mobile business interactions, including the concept of whenever, wherever and whatever (see 2.4). Insights into the current business context (see 1.5 and 2.2) in combination with foundational definitions of mobility, capacity and performance in business create the logical interface to the developed cognitive model of Mobile Moments. The model builds on the organisational needs and combines them with the identified cognitive characteristics from the mentioned seven drivers, focusing on individual's ability and capacity to perform a Mobile Moment (see 2.10.2).
Put again into the research process, the cognitive model of Mobile Moments forms the theoretical foundation and target area of the upcoming study. Based on the model and its underpinning theories, research questions will be formulated and taken into practice for further insights and development.

2.12 Research questions

Reflecting and appreciating the cognitive model of Mobile Moments, the next important step is to take the acquired knowledge into business practice. For this purpose, the following research questions have been identified and are targeted by the upcoming study. As introduced in Section 2.4, the research gap surrounds the linkage and definition of a supportive system for the employee's daily job. Therefore the research questions target the relation between Mobile Moments and job performance, the differences and characteristics of mobile interactions during work and the potential success factors of Mobile Moments to enhance mobile strategies.
These have partially been derived from the conceptual body of knowledge, but more importantly, aim to extend the cognitive model (see 2.11) with practical insights of appliance and practice. The cognitive model, including the developed identifiers and drivers, forms the baseline of the research questions. It is proposing further investigations on how the concept of Mobile Moments impacts the individual job performance. This includes the research on key drivers and how to address them adequately in order to integrate Mobile Moments in business practice. It should be mentioned that personal beliefs and interpretations of the existing literature are an important and valuable part of the research as well. Interpretations might be dependent on the author's knowledge of the given area of study (Weed, 2005). Nevertheless, the underpinning goal of these questions and the associated study is to transfer the knowledge into practice and to come up with a comprehensive and appliance-oriented conceptual model of Mobile Moments.
For better understanding, each research question is further described by pointing to the specific source and according to concept(s) introduced as part of the seven cognitive drivers, respectively the cognitive model (see 2.10).

Q. A How does the concept of Mobile Moments impact the mobile workforce by focusing on the individual's job performance?

In addition to the outlined reference to the concept of Mobile Moments and job performance, the relationship between the employee and his tasks and role in the organisation is also important. Influencing factors and theories like the Goal-Setting (Locke and Latham, 2013) or Expectancy (Vroom, 1964) theories and especially the affective theory of work motivation characterise this research question. Overall, the elements of goal, satisfaction and context of use build up this question with the aim to be further investigated through practical experience and knowledge. To become even more explicit, the research question aims to further elaborate the practical impacts of the

introduced identifiers and drivers of Mobile Moments (see Section 2.11). In the upcoming study, the relevance of these fundamentals will be investigated insightfully by professional experience from current mobile business scenarios. Although a theoretical concept has already been established by the cognitive model, professional feedback and concerns derived by the study will provide additional knowledge, value and justifications about the impact on mobile workforces and consultancy.

Q. B How are key drivers in conscious and unconscious interactions involved in mobile work environments?

This research question focuses on the environmental characteristics of mobile work. Where does it usually happen, what are the dependencies and, especially, which conscious and unconscious perceptions and/or actions have to be processed by the human cognition in those cases (Gero and Hanna, 2015). Therefore, elements such as the product, user, efficiency in terms of ability and the actual context of use raise this research question. By already outlining the major identifiers and drivers of Mobile Moments within the cognitive model, this research question aims to understand the interaction-oriented part of mobility. What are usual mobile scenarios in business and how can these be outlined in order to trigger specific behaviours in mobile users? Distinctions between different types of interaction and especially cognitive preferences are considered as valuable information. These will help to develop useful mobile paradigms which can be applied by integrators, further investigated by research question 3.

Q. C How to address the key cognitive characteristics of Mobile Moments to make them work in mobile business?

With key cognitive characteristics, this research question aims for greater understanding of human cognitive and psychological theories. Therefore, the foundational models of working memory (Baddeley, 2002), information processing (Kircher and Gauggel, 2008) and decision-making (Sanada et al., 2013) are discussed in questions about human capacity in relation to sensory perception. With clarification of common characteristics, this information supports the generation of a more generic model, which afterwards can be adapted to the context of mobile business. Aligned elements are especially effectiveness, efficiency and satisfaction, or joy of use, as they refer to the cognitive aspects of the usability model. The cognitive model provides the key cognitive characteristics as groups of identifiers and drivers. Both groups describe a Mobile Moment, but the missing piece lies in an adequate application of them. The aim of this question is to

take the characteristics towards practice, and identify the corresponding triggers to integrate them in mobile business. By this, the impact of the model will be investigated, following the major aim of this study, to leverage mobile workforce performance by providing a consultancy framework of Mobile Moments. It links directly to the earlier defined research objective 4 (see 1.7.2) in terms of elaborating and understanding implications for practice, while aiming for a comprehensive guidance to apply the model in mobile strategy consultancy.

As chapter summary and an interim conclusion of the given research, the characterisation of the theoretical context has been shown by discussing important literature, stating crucial disciplines, definitions and concepts and aligning them with the overall research objective. The business context as part of western mobile workforces and their bridging factor in mobile strategy consultancy has been set. Important theories and models have been put into context by referring, comparing and outlining their individual definitions within the theme of study. With a critical standpoint on influential debates, the weight of evidence has been evaluated by preconditioning new arguments and a set of valuable research questions, which will be taken forward into the study. The upcoming discussion and analysis of practical experience confronted with theoretical concepts of the seven cognitive drivers form the study's most important facilitator and build the bridge between theory and practice in terms of a conceptual model of Mobile Moments.

Part III

Methodology

3 Philosophy and methodology

The upcoming chapter defines and illustrates the path and choices of the underpinning research philosophy. Decisions are outlined and critically justified against other philosophies and always related to the research's aim and objectives. This includes objective considerations and evaluations of impacts on the main study in terms of its overall design, methods used and outcomes expected. The overall progress of the study outlines the steps taken from a pilot study, across the characteristics of the main study, towards the factors of comprehension and justification of a follow-up study.

In detail, this chapter focuses on the author's mapping in terms of the underpinning ontology, epistemology, axiology and methodology, which forms the philosophical guidance throughout the research. Individual definitions and comprehensions of these philosophical layers are provided, where appropriate, and supports the golden thread throughout the methodology.
Before going into detail on each of the defined settings, a philosophical framework summarises the upcoming definitions and decisions in advance, as illustrated by Figure 3.1. The framework also represents another important milestone in the endeavour to provide methodological comprehension of the targeted conceptual model of Mobile Moments.

In addition to given theories and definitions, an academic standpoint also includes the author's personal background. Moreover, it enhances the overall understanding of structure, value and truth and must not be missed. With a Master of Science in media informatics the author has proven scientific research abilities from an applied natural science perspective. By majoring in human and machine interaction and with a related understanding of human cognitive psychology, there is a fundamental knowledge on social, cultural and psychological interdependencies and their influence on perceiving the world. This short summary on the background as well as the associated earlier work, also shapes the author's philosophical standpoint and is recognisable throughout the following discussions.

3.1 Philosophical framework

In advance of the upcoming characteristics of an underpinning research philosophy, the main purpose of the given section is to outline the impact of the choices made in terms of study design, data collection methods and their influences on results and conclusions. As a methodological milestone, Figure 3.1 summarises the research's choices and visualises them as the author's golden thread within an individual research philosophy framework. The upcoming sections define, discuss and argue the choices made and provide clarity about the developed framework. For the sake of comprehension, the summary and illustration have been put in advance of the upcoming definitions.

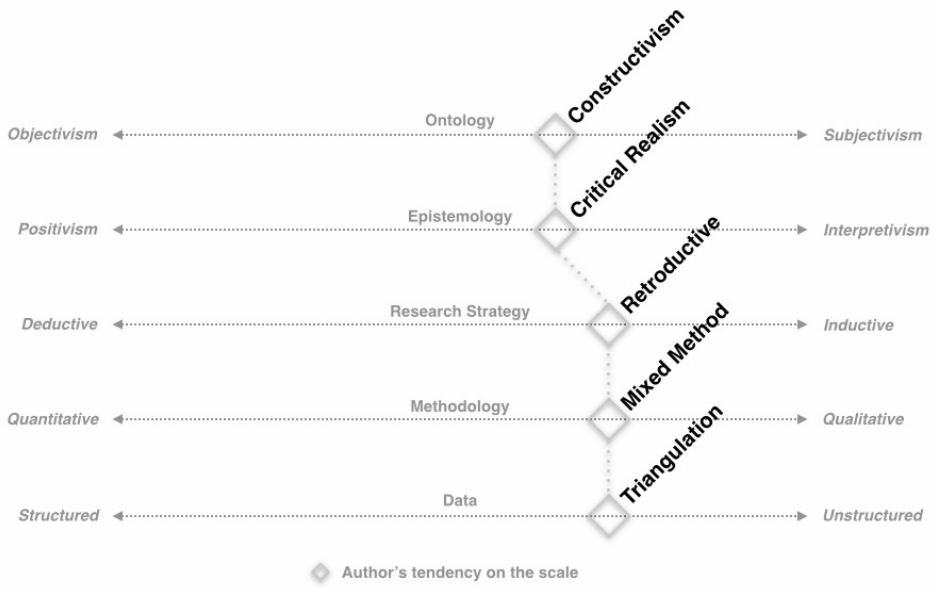

Figure 3.1: Individual Research Philosophy Framework (Source: Author).

The developed framework has a strong impact on the overall research process and as Eriksson proposes: "All research methods are in close connection to research philosophy and to the ways it is possible to bring forward new knowledge through research" (Eriksson and Kovalainen, 2008, p. 10). By choosing and defining the individual ontology as represented by constructivism, decisions were made to accept truth and knowledge

as a construct of the subjective perception of reality (see Section 3.2). Furthermore, in stating a critical realism epistemology, the research challenges positivistic literature, aiming for enrichments through interpretations and social relations. Nevertheless, the research does not dismiss any key literature just because of its underpinning philosophy. Rather it uses these for critical comparisons and alternating point of views (see Section 3.3).
The philosophical position has its strongest impact on the expected outcomes and conclusions. In comparison to an objectivist/positivist position, which aims to acquire an absolute verification or falsification of a research hypothesis, the author (critical realist) pursues the development of guidelines and a model intending to extend the current knowledge and having a potential influence on practice. The choice of the word "potential" is key in this definition, because the author accepts the partial fallibility of the model in a few usecases and rather focuses on delivering impacting factors by understanding the underlying relations.

With the comprehensive goal to understand the interdependency between the three key areas of psychology, technology and mobility in business (see Chapter 2), the research already includes various styles of literature and knowledge. Due to this, the chosen methodological and strategic approach (retroduction) supports the identification of information from unstructured as well as structured data (see Section 3.4). Although positioning on a central-subjective sphere on the scales (see Fig. 3.1), quantitative data and positivistic resources still form an important source for the given research. This structured information is enriched by unstructured data gathered by qualitative research methods (semi-structured interviews and a structured follow-up study). A comprehensive positioning within the current field of study is achieved by taking advantage of secondary empirical resources and explanations of phenomena. The same is also used to establish the research on theoretical foundations and, most importantly, to fill the identified research gaps using subjectivist knowledge from the study. This combination of different type of data underpins the provided individual philosophical framework and sustains the used research method.

3.2 Ontology

"Ontology is the starting point of all research, after which one's epistemological and methodological positions logically follow." (Grix, 2002, p. 177).

Following Grix interpretation, and addressing the aims of what to achieve with it, the directional relationship between what a researcher thinks can be researched (ontological position) linking it to what is knowable about it (epistemological position) and how to acquire it (methodological approach) builds up the layered foundation of academic research (Grix, 2010).
Highlighting the importance of understanding the different layers of a philosophical approach, an ontology represents an overall setting as it, suggested by Norman Blaikie, "refers to the claims or assumptions that a particular approach to social enquiry makes about the nature of social reality – claims about what exists, what it looks like, what units make it up and how these units interact with one another" (Blaikie, 2007, p. 6). Ontology therefore relates to what exists and the reality emerged from it (Goodin and Tilly, 2008). It splits up two opposite positions on a scale: Objectivism and subjectivism, as defined by analysing social entities "considered as objective entities that have a reality external to social actors", or from a subjective viewpoint "as social constructions built up from the perceptions and actions of social actors" (Bryman and Bell, 2011, p. 20).
Talking about the scale between the two extremes of objective realism and multiple subjective realities, there are also ontological beliefs located therein: and modern literature struggles to produce a unique definition of them. Nevertheless the author's personal belief accords neither with a definite-objectivistic nor with an ultimate-subjectivistic viewpoint. In fact the definition of one indisputable truth challenges the personal conviction of individual understanding based on meta-social and perceptual experiences. In contrast, the subjective development of multiple realities lacks against the uniqueness of reality itself, even though this reality might have multiple percipience of truth. The definition of (radical) constructivism as "truth, and knowledge, are not representations of a reality independent of, or beyond experience" (Matthews, 1998, p. 46) fits the earlier refusal of primarily objectivism and slightly eases the field of subjectivism (Mills et al., 2006). In stating this, constructivism aligns with the author's beliefs using the following interpretation:
Constructivism originates in the sphere of relativism and appreciates multiple truths of subjectivism, which by definition is a philosophical counter viewpoint to objectivism. Meaning and knowledge is constructed by interactions between social actors and the environment including the researcher himself as a strong influencing factor (Collins, 2010).

In relation to the proposed research, which highlights cognitive psychological interdependencies with mobile technology and motivation in business, the human being and their experience is key for the analysis. The research approach aims to understand related dependencies, influences and reasons by interpreting the state of knowledge and especially involved human actors themselves. Combining these, underpins the identified constructive ontological position.

3.3 Epistemology

The earlier section stated constructivism as the major underpinning ontology. The next layer within research philosophy and approach represents the definition of an aligned epistemology. This section focuses on epistemology as the theory of acceptable knowledge as described by its addressing discipline and scope (Myers, 2013).
In addition, the chosen epistemology is crucial to the later discussed methodological research design as it is embedded in the theoretical perspective of knowledge gain (Crotty, 1998). Similar to the ontological scale from objectivism to subjectivism, the epistemological sphere scales underneath likewise from positivism to interpretivism (see Fig. 3.2).

Figure 3.2: Ontological and epistemological spectrum in research (Data by Lewis et al. (2007)).

As in the past, mostly positivistic approaches were considered as appropriate proceeding in research, there is still one common definition of epistemologies: Either it is positivism or non-positivism. In this case non-positivism includes every other epistemology as the opposite of positivism (Adams et al., 2005). Nevertheless, it does make sense to start with a definition of positivism and use it for critical comparison in order to identify differences and similarities to a chosen approach. "Positivism is an epistemological position that advocates the application of the methods of the natural sciences to the study of social reality and beyond" (Bryman and Bell, 2011, p. 15).
The definition refers to the perceived purpose of science to describe phenomena that are experienced in nature. The key point is to stick to what can be observed and measured, anything else, "a positivist would hold, is impossible" (Trochim, 2006b).

The opposite epistemological position can be defined as non- or anti-positivism and in its strongest representation as interpretivism. Interpretivism in this case is obviously positioned on the very subjective dimension on the scale. Anti-positivism may take various forms but is firmly striving against the utility of a search for laws or underlying regularities in the world of social affairs. Anti-positivists would hold, that the social world is essentially relativistic and can only be understood from the point of view of the individuals who are directly involved in the analysed activities (Burrell and Morgan, 1979, p. 5). "Interpretivism is taken to denote an alternative to the positivist orthodoxy that has held sway for decades. It is predicated upon the view that a strategy is required that respects the differences between people and the objects of the natural sciences" (Bryman and Bell, 2011, p. 17). It requires acceptance of the subjective meaning of social action, thus the individual perception of truths in combination with the dependency that every measurement is fallible (Trochim, 2006b, Gialdino, 2009).

With the earlier described and chosen ontological position for the upcoming research as a constructivist, there is, by definition, a disconnect with the positivistic epistemology. The acknowledgement of multiple truths forms a key pillar of anti and non-positivism, which leads the focus to a more relativistic and interpretative epistemology. The author's belief supports the interpretative concept as described by Coolican (2014, p. 316): "Meaning and knowledge are constructed by the researcher, who conveys subjective experience through double hermeneutics". On the other hand, the foundation of most of the given interpretations rely on empirical knowledge gained by positivistic research methods. This fact supports the positioning on the scale as a non-extreme epistemology. Neither fully supporting the infallible truth of positivism nor the acknowledgment of everything to be challengeable.
The appropriate epistemology is located in between, aligning with some thoughts of interpretivism, but more likely supporting critical realism as a major underpinning epistemology and critical influencing factor for constructivism. Critical realism neither completely accepts a subjectivistic nor an objectivistic ontology and takes the view that the social world is reproduced and transformed by mechanisms that are real, but that are most likely not directly accessible for observation (Bhaskar, 2010, Bryman and Bell, 2011).
Axiology represents the way in which research is conducted (research strategy). It defines a branch of philosophy that studies judgements about value and how these values permeate the way of approaching the research objective (Lewis et al., 2007). The statement of acknowledgment of the researcher's value excludes axiology when representing positivistic philosophy, because it should be value-free in any case. Nevertheless, the author values the knowledge of empirical and objective research, especially in the con-

text of psychology, and uses it for critical discussions and enhancement by interpretive epistemologies. Therefore, the main aim of the study does not seek for a radical change in current business society. It rather pursues the better understanding, awareness and critical discussion of the context and focuses on the development of a comprehensive and influencing conceptual model.

3.4 Research design and methodology

The link between ontology and epistemology strongly implicates the overall research design and how knowledge is investigated and interpreted involving the social paradigms (Burrell and Morgan, 1979). The following section illustrates the influence of a constructivist's ontology in cooperation with a critical realist's epistemology. It predefines the methodological approach and design of the author's research process.
Another important dimension provides the approach of how knowledge is developed and used for enabling a designated outcome. Options are extended between deductive and inductive research strategies, whereby a deductive approach represents the development of a highly structured classification scheme based on extensive literature and existing knowledge.
This scheme is used during the scientific analysis of specific scenarios and provides verification of raised hypothesises. It is mainly used in order to generalise a final outcome (Collins, 2010). This strategy opposes an inductive approach, which is defined as the development of a generic framework or model based on interpretations supported by observations, context information and the understanding of meanings (Trochim, 2006a, Bryman and Bell, 2011).
Collins (2010) summarises the differences between a deductive and an inductive strategy as follows (refer to Table 3.1):

Deductive strategy	**Inductive strategy**
More scientific principles	Gives an understanding of the meanings people attach to various contexts
Move from theory to data	Gives an understanding of the research context
Emphasis on quantitative data	Emphasis on qualitative data
A structured approach	A flexible approach that allows a change in emphasis as the research continues
The researcher is separate from the research process	The researcher is part of rather than separate from the research process
Need to generalise results by selecting samples of a sufficient size	Less need to generalise results
The need to explain causal relationships between variables	

Table 3.1: Differences of deductive and inductive approaches (Collins, 2010, p. 43).

On the scale between deduction and induction, retroduction represents a research strategy referring to an inference in which a theory or substantive hypothesis is posited to explain observed patterns Van de Ven Vernon (2000). It includes the acceptance of falsification as a scientific conclusion and corresponds with the inductive statement of social influence. Developed frameworks, models or theses are generalised beyond a specific case and are nurtured by existing literature, thereby confronted with observations and interpretations.
In relation to the given field of study, especially regarding the strong usage of psychological background, the retroductive strategy fulfils the requirement to build on top of existing knowledge. It also critically reflects and challenges the assumptions raised and uses conducted and interpreted study data to generate a reusable model of guidelines. Since retroduction adopts most of the inductive beliefs, the literature often refers to it as another opposite of deduction and it is positioned on the scale closely aligned to induction Van de Ven Vernon (2000). Using this scale to approach the intended methodology, a deductive research strategy commonly fits a quantitative research methodology, whereby induction usually supports qualitative researches (Bryman and Bell, 2011).

It is necessary to understand that this relation does not represent a final statement. It rather explains suggested strategies to acquire the expected epistemological outcome. Deduction, as well as induction and especially retroduction, can take advantage of quantitative, qualitative or mixed methods as long as it fits the study's context. With the help of triangulation qualitative data can be combined and integrated with quantitative data in order to achieve synergetic information and a wider coverage on the topic's area (Taylor, 2005).
Taking these considerations into the research context, it aims to enrich existing knowledge by critically reflecting the state of the art and understanding the practical influence from experts in this area. It is especially the endeavour to understand complex social relations and experiences, which suggests using qualitative research methods such as unstructured or semi-structured interviews. The decision to use semi-structured interviews instead of an unstructured approach relies on the researcher's given contextual profession and knowledge. As a major advantage, professional expertise can be leveraged to have meaningful and in-depth discussion with the interviewees. In this case, the risk of imposing arguments by the researcher needs to be targeted by a well-defined interview guide, as assured in Section 3.6. Considering benefits and risks, this approach aligns with the interview's principles to (1) avoid leading the interview or imposing meanings, and (2) to create a relaxed, comfortable conversation (Zorn, 2008).
The qualitative interview also empowers the idea of a continuous development of the underpinning theory and knowledge. In addition, quantitative secondary data is used as an important facilitator to positioning the expected findings within the current body of knowledge (see Chapter 2). Combining both, retroduction forms the linked structure for these methods while accommodating the evolving maturity of knowledge and practice as illustrated in Section 3.1.

3.5 Pilot study

A pilot study including two sample interviews was conducted in 2016 and advanced the overall research process and proofed the chosen approach to investigate the defined business problem. Some potential flaws have been identified but notably confidence and justification for the research approach have been gained. The pilot study, represented by a qualitative methodology conducting semi-structured interviews with meaning-based analysis, confirmed the intended practice-oriented approach of the given research project. Results have shown initial hints and preliminary factors, to be extended in the full-scale study. As a result of the pilot analysis and during academic discussions on it, the aforementioned categorisation for analysis and coding has been reviewed and optimised.

Key insights from the pilot study, which affected the full-scale study, included the necessity for interviewees to be characterised as subject matter experts for mobile [strategy]. The pilot study showed that a casual (non-expert) user of mobile technology is not able to provide sufficient insights as expected for the given research. The importance of expert experiences and strategic grasp or intuition has been highlighted for the ongoing research and data collection.
Further learning from the pilot study has been adapted to the interview guide, such as rearranging of the dialogue's flow or changing certain interview questions, in order to better take into account the interviewee's expectations. An interesting additional interview question came up during the pilot, asking for more input to better understand the perceptual preferences of the participants (Simplified: Preferred cognitive actioning by serial (text) or visual processing (images)). The questioning of this potential difference across interviewees has not been accounted for in the initial interview guide, but showed great value as a conversation opener regarding human cognition and information processing. Its relation to the cognition focusing drivers of Mobile Moments (see Section 2.11) is evident, especially in terms of the cognitive capacities (see 2.7.1). The overall research methodology and the approach including methods and techniques were confirmed during the pilot study and have been taken forward into the main study.

3.6 Main study

The literature review and documentary analysis have been seen as key input parameters to identify the cognitive aspects of mobile business interactions. For the sake of building up a practice-oriented conceptual model on top of it, a primary data collection was conducted between September 2016 and December 2017. With small adaptions from the pilot study (see Section 3.5), the interview guide was brought into the main study which aimed for deeper strategical and practice-oriented insights. The adequate source for such has been identified by subject matter experts in mobile [strategy] who could provide extended experiences in the mobile consultancy sector across multiple industries and companies. A closer look at the participants' personae can be found in the upcoming sections (see Section 3.6.2). For the sake of comprehension and ethical correctness while conducting interviews, general regularities and recommendations for study practice (Allmark et al., 2009) and the Napier University's guidelines for "Research Integrity and Governance"(Edinburgh Napier University, 2016) were taken into account. Furthermore, the overall interview process included the following artefacts, which can be found in Appendix A:

Invitation letter: Personalised invitation to take part in the research interview

Interview questionnaire: Summary of interview characteristics, settings, questions asked and relations to the research topic

Interview FAQ: Questions and answers for the participants regarding common concerns about taking part in the research interview

Consent for participation: Upfront agreed, understood and signed consent to take part in a research interview

Research abstract: Rough information about the research topic, required as part of the interview

3.6.1 Concept of data collection

An advantage of semi-structured interviews is based on the flexibility within the conversation flow depending on several deep-dives or skipping of some questions (Kvale and Brinkmann, 2014). Hereby the researcher is open to additional information, whilst keeping track of the research questions. It is especially helpful in terms of concretising the mobile strategy experts' experiences and assumptions which often arises from different and sometimes confidential projects and client engagements. The theoretical background provided in Chapter 2 and especially the developed cognitive model are involved subliminally and frame the interview context.

In alignment with the overall research objectives, the main study primarily focuses on research question Q. A during the interviews, since its outcome enriches the understanding of practical Mobile Moments from different viewpoints (consumer, worker, colleague and strategist). Research question Q. B still represents a topic open for critical discussion during analysis, which is likely to supplemented by assumptions of the participants. The subjective experience is key to this question (see Section 2.12).
In summary, the overall research promotes data collection by interviews in order to gain practical insights regarding question Q. A. At the same time in terms of the research question Q. C a theoretical standpoint is raised from literature and documentary analysis. Research question Q. B includes aspects of both and builds a coherent bridge between theory and practice.
The formulated specific interview questions are based on and aligned with Kvale and Brinkmann (2014) and their expectations of semi-structured qualitative interviews. Different types of questions are used as a flexible conversation guideline including introductive, follow-up, probing and interpreting questions (and more).

The constructivism ontology promotes the acceptance of truth and knowledge as a construct of a subjective perception of reality, which has notable impact on the justification of the research findings as described by the limitations later on in Section 5.2. Semi-structured interviews empower practical insights into continuous development of the existing theory and knowledge. They also promote extended comprehension of variables already relying on a relatively small sample size (Bryman and Bell, 2011). In this context, the sample used in this study has been identified intentionally as expert consultancy employees for mobile strategy. Extensive experience in mobile technology and integration justifies them as subject matter experts in the area of investigation. Their expertise is advantageous to the in-depth understanding of expectations and behaviours in past, current and future mobile business and represents the important factors of practice towards the conceptual model of Mobile Moments.
As a reminder, the major endeavour the research pursues is a better understanding and appliance of Mobile Moments by constructing a comprehensive conceptual model from the various heterogeneous cognitive fields of study (Taylor, 2005) and practical experiences.

3.6.2 Sample, demographics and personae

Before going into the actual results of the study, this section introduces the participants of the study and their characterisation as a subject matter expert for mobile strategy and mobile technology in the workspace. For this purpose, short anonymous personae illustrate core demographics and characteristics of the interviewees (considering privacy and confidentiality). The following Table 3.2 provides an insight into the participants' current job roles, age ranges and locations. It also provides year's of experience within the strategy and technology sector as well as their self-categorisation into one of four initial perspectives of expertise. The participant's expertise is a reflective and closed categorisation based on the individual's profession. The options range between consumer of mobile technology, to mobile worker or colleague and mobile strategist. The participants have been asked to identify themselves as part of the interview based on the definition further elaborated in Section 4.3. In addition to the eight participants of the main study, further three experts are characterised (Subject I, J, K), since they are only taking part in the consecutive follow-up study, as described in Section 3.7.

Sub.	Job Role	Sex	Age(y)	Exp.(y)	Loc.	Expertise
A	Executive IT Architect	M	40-50	>25	AUT	Strategist
B	Lead Solution Architect	F	40-50	>20	USA	Strategist
C	Lead Delivery Architect	M	30-40	>20	IN	Worker
D	Integration Architect	M	30-40	>20	IN	Worker
E	Principal Consultant	M	40-50	>15	DE	Strategist
F	Mobile Consultant	M	40-50	>15	DE	Strategist
G	IT Consultant	M	30-40	>10	DE	Strategist
H	Mobile Architect	M	40-50	>10	DE	Worker
I	Senior Consultant	M	40-50	>15	DE	Strategist
J	Senior Project Manager	M	30-40	>10	DE	Strategist
K	Senior Designer	W	30-40	>10	DE	Strategist

Table 3.2: Summary of sample characteristics (Source: Author).

As per Meyer and Booker (2001, p. 3), a subject matter expert (SME) "is a person who has background in the subject area and is recognized by his or her peers or those conducting the study as qualified to answer questions". Bearing in mind the study's aim to enrich the cognitive model by the SME's experience, the following section provides a brief overview of the sample selection and justification of expertise in the field of study.

> Sub A: With over 25 years of experience in IT consultancy sector and almost ten years almost exclusively working on mobile projects, the participant always wants to be at the forefront of technological trends, gaining high skills in "less commodity topics". It drives them to be considered a technical expert focusing on upcoming trends and conveying them to various clients (Interview: Field Notes Respondent A).
>
> Sub B: Understanding that the influence a mobile device can have on people's lives and jobs is a gamechanger. Twenty years of experience in developing, architecting and testing client solutions proofs a wide range on integrative projects across multiple industries. Cloud, analytics and mobile usecases represent only a small but most current expertise, which they are taking to clients around the globe (Interview: Field Notes Respondent B).

Sub C: A strong background in wireless technologies within the automotive industry for about twenty years sets the foundation of their current detailed expertise on mobile technology. Introduced by colleagues, the Apple/IBM Partnership (Apple Inc., 2014) and its predecessors made them to one of the Lead Delivery Architects for mobile client-facing projects across the globe. (Interview: Field Notes Respondent C).

Sub D: About 22 years of a professional journey which includes application and middleware development, master-data and database management, as well as cloud and data exploration services and merges into mobile technology for the last 12 years. Independent from industries, mobile enterprise integration has become their major focus and profession (Interview: Field Notes Respondent D).

Sub E: With background in managing consultancy and physics as an academic, they moved to the role as an IT Architect about 17 years ago. Since then, and as part of the service branch, they are almost always working at client site. During this time they have moved themselves towards mobile business and practice and switched company last year to become a Principal Consultant (Interview: Field Notes Respondent E).

Sub F: With a more managing and consultancy focus, they are working for client projects across Europe and has been focusing on mobile strategy and assessment for over 15 years. Working with executives internally and externally provides extensive insights into different industries and mobile workforces (Interview: Field Notes Respondent F).

Sub G: Ten years of experience in project management and mobile consultancy have enriched their knowledge about workforce management and mobile practice. A focus on modern entrepreneurial strategies and process models supports the strategist point of view and provides experience in a broad set of various clients across different industries (Interview: Field Notes Respondent G).

Sub H: Application and development oriented work in several areas such as finance, banking and trading requires a professional foundation in organisational and user-oriented understanding. As a mobile architect further more, they have over ten years' experience in complex client projects, developing solutions for clients internally and consumers externally (Interview: Field Notes Respondent H).

Sub I: With a doctoral degree in informatics, they moved their level of expertise from a technical degree to a consulting-oriented profession within several com-

panies. First, mainly active during definition of requirements and later holding managing roles in several projects, they formed their curriculum as an interface between clients and delivery. Appliance of user-centric processes, design thinking and mobile experience describe their current profession (Interview: Field Notes Respondent I).

Sub J: As a project manager and transition manager in the area of cloud, analytics, mobile and security, they have responsibilities within several client projects. With extensive experience in mobile, agile and design thinking they apply and communicates as a professional coach on these topics. In their role of business analyst or scrum master they were able to get insights from various different clients and industries across Europe. (Interview: Field Notes Respondent J).

Sub K: A background and profession within user-centric design, user experiences and human-computer interaction make them an expert on a senior level. Several client and coaching engagements provide a wide set of expertise in digital strategies and opportunities. An additional background in mobile development synergises practical experiences and relationships between theory and practice (Interview: Field Notes Respondent K).

3.6.3 Study characteristics

In the context of qualitative interviews, the question of who and how many participants to invite is always an important challenge. For participant selection, the author's profession and network within various larger and global organisations, advances the identification of interview partners on thought leader levels. Due to this, business and technical experts have been identified as outlined in Section 3.6.2.
With justification of analytical saturation (see Section 4.7) a relatively small sample size [eight] of expert architects and expert consultants already represents an adequate collection of practical knowledge from the main study. Adequate means, in this case, an appropriate amount and saturation of practical insights necessary to further enrich and elaborate the illustrated cognitive model towards practice (Marshall et al., 2013). This requirement has been raised by the pilot study as mentioned before (see Section 3.5) and reviewed as part of the follow-up study (see 3.7). The focus on expert interviews instead of consumer interviews has also been discussed and justified as one of the major findings from the pilot study.
In addition to the selection criteria of adequate interview partners, the schedule of the face-to-face interviews is an additional challenge. In the main study, identified mobile experts are located across Europe, India and North America. Therefore meetings must

be aligned and travel arranged accordingly, always focusing on the research's deadline. This challenge in terms of time and the adequate adoption in the plan have been addressed in the study's schedule leading to the given research path.
In summary each interview lasts about 45 to 75 minutes and has been conducted face-to-face in quiet and conducive environments such as a meeting room or hotel venue. Each of the interviewees have confirmed their willingness to participate and agreed on the interview process including audio recording and data management. In total, there were eight subject matter interviews conducted as part of the main study, followed by three as part of the follow-up study. Using the approach of semi-structured interviews, a set of 26 questions were prepared and asked according to the individual conversation flow.
The manual thematic analysis (as described in Section 3.6.4), including transcribing, reading, coding and theming, has been aided by the use of NVivo for Mac (Vers. 11.x), providing support in data orchestration, management and extraction (QSR International Pty Ltd., 2016). All data collected have been anonymised, processed and archived according to Napier University's guidelines for *Research Integrity and Governance* (Edinburgh Napier University, 2016).

3.6.4 Data analysis

From a research process perspective, the identification of initial codes and categories derived from the main study is based on the research questions as well as the transcripts. The process includes reviewing and revising remarkable groups and the lookout for major themes. A helpful (but not the only) starting point for theming is the adoption of the earlier developed seven cognitive drivers (see Section 2.11) describing the involved concepts for Mobile Moments. These already open up a broad viewpoint on the data collected and obviously align with the research questions, interview topics and questions asked. However, the research needs to ensure that the outcome of the interviews not only reflects and confirms the research questions but also brings in new ideas which have not been considered before. The analysis needs ensure that these inputs are not blocked unintentionally.
In order to achieve this aim, the process of analysis has been designed around thematic analysis and coding techniques. As Guest et al. (2011, p. 138) states, "Thematic analyses move beyond counting explicit words or phrases and focus on identifying and describing both implicit and explicit ideas within the data, that is, themes". Further, that "Codes are then typically developed to represent the identified themes and applied or linked to raw data as summary markers". The combination of overarching themes, linked codes and relations between descriptive and interpretive techniques support the

research's aim to provide a conceptual model. It also advocates the consumption and interdependency towards the earlier cognitive model in terms of building up new themes and codes and put them into relation with existing ones. Further interpretative capabilities and the tendency towards a critical realism epistemology support the combination of individual and non-individual experiences to form valuable characteristics within this research. This being said, arguments advance the choices of thematic analysis for this set of data and aimed for outcomes, neglecting, for example, well-known and also meaning-based analytical strategies like grounded theory or phenomenology (Guest et al., 2011, Bryman and Bell, 2011, King and Horrocks, 2010).
For a better picture of how thematic analysis is used during analysis, the process can be tailored into three stages (see Fig. 3.3), whereby the movement between them is rather iterative than sequential.

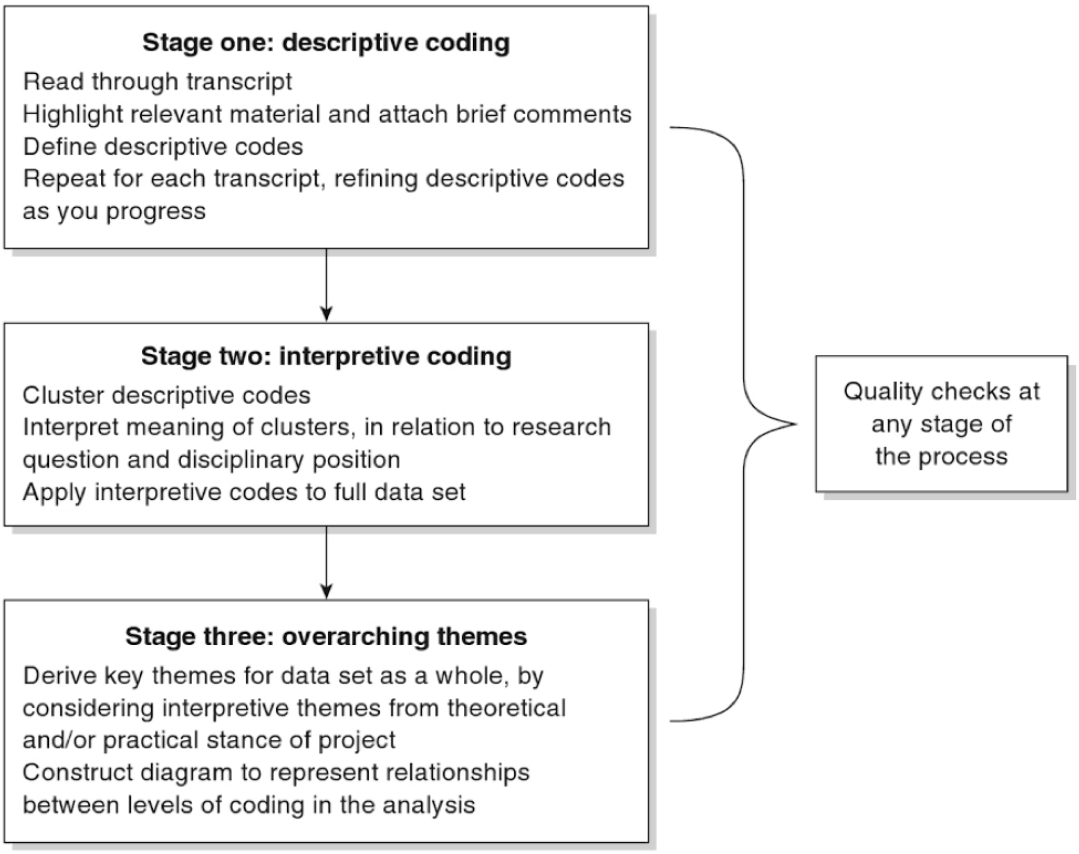

Figure 3.3: Stages in the process of thematic analysis (King and Horrocks, 2010, p. 153).

Adapting this process of thematic analysis into the given study means in stage one to focus on the transcribed interviews with minimum bias. Although, and as a matter of fact, the interview questions and guidance are based on the developed research questions, but within this step, focus remains on identifying relevant data and their descriptive codes. This stage is also called "open coding", as it represents an unrestricted initial and syntax-based coding of the data (King and Horrocks, 2010). This first part of the analytic process is also sometimes noted as "fracturing", since the activity focuses on "taking data apart and examining the discrete parts for differences and similarities" (Priest et al., 2002, p. 33).
During stage two, these new descriptive codes can be clustered into categories of code and put into direct relation to the research questions. Even more important to the research progress, they are placed in relation to the initial cognitive model including the drivers of Mobile Moments. The clustering and analysis around one category is an essential aspect of coding and results in cumulative knowledge about relationships towards other categories and subcategories. Strauss (1987) describes this process as "axial coding", which links the stages one and two as shown in Figure 3.3.
Stage three pulls together the codes from the earlier stages and puts them into a reduced set overarching themes. These themes provide a cluster and are the root node for the code hierarchies built up from stage one and two. This is also the key interface to conceptualise and connect the findings to the extant literature. With identification of core categories and their relation to the cognitive model, this final phase of coding provides the practical input and dependencies in the comprehensive conceptual model (Priest et al., 2002).
As a result of all these steps, the earlier cognitive model of Mobile Moments extends to a theme-oriented and broad map of theoretical and practical influencing factors, which has to be taken into further discussions and minimised into a comprehensive but applicable new conceptual model of Mobile Moments for mobile strategies.

3.7 Follow-up study

Following the results and findings of the main study (see Chapter 4), a follow-up study extends the developed model into an actual usecase. This approach aims to further support the decisions made in terms of methodology and sample selection as well as underlining the appropriate level of saturation while conducting the main study (see Section 4.7). For this purpose, the developed conceptual model of Mobile Moments, see Figure 5.4, has been taken into a case study of mobile strategy, which proposes a potential appliance and acceptance as part of a consultancy model.

The case study includes an integration of the conceptual model as part of IBM's MobileFirst and Digital Reinvention strategies (IBM Corporation, 2018d,c). It outlines the potentials and appliance of the model as part of the existing consultancy services and proposes the consideration of Mobile Moments as an additional linked aspect within IBM's mobile engagement model. Details on the strategy and its current usage can also be found in Section 4.7.

The follow-up study conducted in spring 2018, consists of a summarised view on the outcomes of the research and main study and sets the overall context of Mobile Moments. Three additional expert interviews (see 3.6.2), each about 20 to 30 minutes in length, provide further insights on the level of comprehension and acknowledgement of the developed conceptual model. The model evaluates the existing results and especially considers their appliance to mobile strategy consultancy. The study was conducted between April and March 2018 as an online session with design thinking and strategy experts.

Thoughts on appliance are discussed with subject matter experts of IBM in Germany, aiming for critical feedback on the given research's outcome. The discussion and interview flow includes a short presentation (see Appendix B) linking together the business context, relation to IBM's mobile strategy, potential integrators and a derived strategy proposal. For the sake of a practical understanding, also a short example on appliance in the area of field working industries is included. Open for discussion, the participants are asked to confirm their overall understanding of a Mobile Moment in the given context before providing their feedback on the model itself and especially the proposed thoughts of integration into IBM's mobile strategy consultancy.

In summary, the follow-up study aims to receive practical and professional feedback on the conceptual model of Mobile Moments. It also considers critical thoughts and evaluations as further input on the overall comprehension and appliance of the same. In addition, it offers an outlook on potential consecutive studies or investigations at the same time as closing up the given research. A summary of the content, findings and interpretation of the follow-up study can be found in Section 4.7. Detailed outcomes and the used presentation have been put into the appendices (see Appendix D).

3.8 Critical reflection and ethics

Qualitative research aims for understanding of complex meanings, this, by definition, includes matters of interpretation and value of certain sub topics. The expectancy of expert experience by itself, mostly excludes the application of quantitative methods within this research, since the subjective input has been identified as the missing factor to enrich the developed cognitive model. This also underlines the usage of an analytical

focus on meaning instead of e.g., language. Priority remains on the subjective experience instead of the quantification by quants and figures. From a critical methodological perspective, the chosen qualitative approach is also well known as a subject to philosophical criticism due to its nature of interpretativism and subjectivism, which, even with stated argumentations, is always subject to critical discussions (Gomm, 2009). The final identification of the research's major target to develop a comprehensive framework from theory with and for practice, justifies the methods chosen. The confidence in the study's and researcher's philosophical stance is clearly something which was achieved during the previous research steps, but is always a valuable point for discussions (refer to 3.1).

Already admitting the controversy about the choice of a suitable methodology for the study and researcher's stance, the context itself embraces multiple potential ethical discussions. Switching from a method- to theme-oriented focus, which offers a broader view on the topic, the area of mobile business historically confronts ethical discussions such as continuous availability and blurred lines between private and business spaces (Douglas, 2014). The earlier mentioned term "work-life integration" and even more its precursor called "work-life balance", highlights the acknowledged convergence of business and leisure. It should only be mentioned, that ethical discussions are concerned with a broad spectrum in current business research and explicitly the employee's "on-time" in contrast to "off-time" or vacation. The context of leisure versus work is also a topic debated intensively in government and health-oriented organisations, as, for example, a law in France about the dedicated "right to disconnect" (Hesselberth, 2018). In fact, the concept of these shifting boundaries between the contexts is already a commonality, especially in consultancy-oriented work environments (Douglas, 2014).

The study's expectations have been met, given that this sensitive topic comes up in most of the conducted interviews. Although it has been identified as a valuable aspect in mobile strategy, its impact on the understanding of Mobile Moments is limited. Therefore, the related ethical discussions are intentionally postponed and separated to a potential later consecutive research activity. At this point, the ethical discussion is considered as a distraction to the interviewees and the overall research, which aims to understand the cognitive predecessors instead of valuing the ethical quantification and limitations (Allmark et al., 2009). However, while still appreciating these and other ethical discussions on the topic, the conducted interviews required ethical approval for carrying out qualitative research on human beings as such. The semi-structured interviews have, therefore, been aligned with the general regularities and recommendations for study practice (Allmark et al., 2009) and the Napier University's guidelines for "Research Integrity and Governance" (Edinburgh Napier University, 2016).

Part IV

Findings and discussion

4 Study, findings and discussion

The aim of this chapter is to provide a comprehensive view on the data collected from various subject matter experts in mobile strategy and the relation as part of a conceptual model of Mobile Moments. Based on the aforementioned thematic analysis, the input gathered from the semi-structured interviews is set into context. It is structured using defined coding techniques (open, axial, selective) in order to provide a comprehensive route towards overarching themes and interpretations against the cognitive model. The themes provide an insight into the complex relations between the different user-oriented viewpoints of Mobile Moments, while developing an analytical and enriching practical characteristic to the earlier cognitive model.
With the upcoming findings, including related discussions and model extensions, the theoretical concept becomes more relevant and applicable to the mobile practice. Moreover, within those discussions, and in combination with the cognitive model (refer to 2.11), the researcher's professional experience (see 3.1) influences and leads further comprehension in interpreting the themes extracted. Figure 4.1 illustrates the aims of this chapter within the research process and extends the earlier stages consecutively. With application of initial perspectives (see Fig. 4.2), an entry point for data collection and analysis has been given.

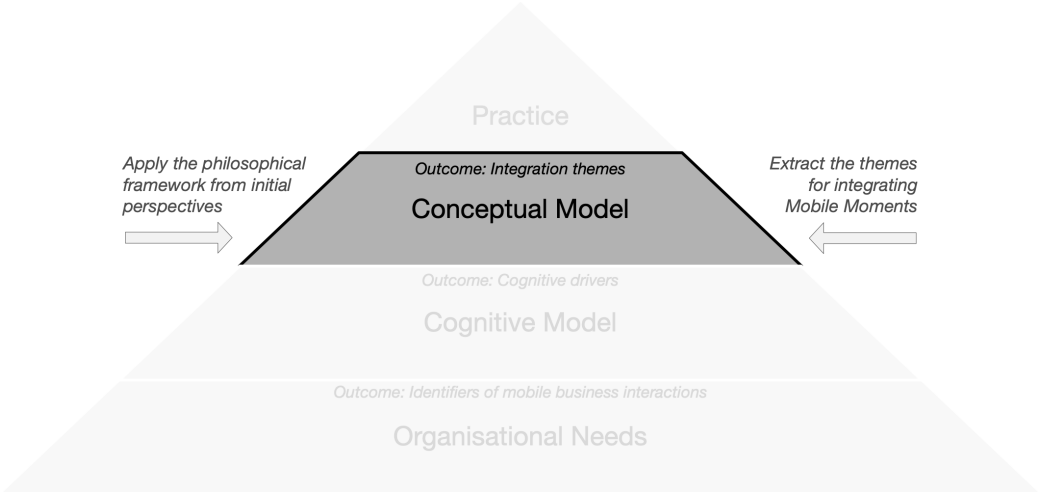

Figure 4.1: The underpinning research process: Conceptual Model (Source: Author).

4.1 Key results

Before going into the actual findings and discussions, this section should give a glimpse of some of the most interesting outcomes compared to the expectations defined by the earlier chapters. The study's aim in relation to the research questions in Section 2.12 proposes an initial view on the data collection and frames the outcomes to a certain extend. Nevertheless, throughout the interviews and data analysis, some particular findings represent synergies to extend the research's outcomes and make its value even more prominent in the context.
This underlines the constructivist ontology and related methodological approach into the thematic analysis, accepting multiple perceptions of truth and being able accept interpretative thoughts and ideas. It supports the aim of understanding relations and interdependencies within the characteristics and integrators of mobile moments, especially in terms of the potential appliance in practice and strategy. The thematic analysis method drives this intention by the means of descriptive codes building up themes by axial coding and interpretation from a saturated set of inputs.
In fact, several important themes and outcomes for the later definition of the conceptual model are highlighted from the upcoming analysis:

The **emotional bond** between the user and their device is one of the major influencing factors of mobile interactions. Although literature already mentions the factor of emotion as part of performance and motivation (see 2.8), its importance and actual multidimensional perception becomes clearer by the study's findings. Emotion is not only part of mobile business as a pillar to cognitive performance, it is also an external characteristic to describe an intimate relationship between a user and their supportive technical device. This finding goes beyond the earlier expectations and describes one of the most important themes as further elaborated in Section 4.4.

Another focal point is the **definition of business value**. The study reveals the importance of information itself rather than the physical interaction with it. In Section 2.6, the definition already describes information "as something changing the recipient's cognitive state", which, from the study's findings, directly aligns with the concept of business value. As one important outcome, business value can be achieved by cognitive processing without "physical" interaction with it (details in Section 4.3.4).

Following up on the same term of business value, the study also reveals a flaw in the earlier definition of **mobile business interactions**. Extending the aforementioned term of physical interaction, it also includes the technical description

of aligned interaction paradigms. In Section 2.4, the research proposes "whatever useful" to be best described by the related *requests, responses and notifications*. In contrast to that, the study suggests disconnecting from the technical interaction paradigms towards the actual value in terms of its content. The definition of mobile business interactions for the conceptual model is therefore changed to a combination of the *value of employee's activity, access of the business context and value of content* (see 5.1).

Further terminology enhances the current state of knowledge about the topic of mobility. **Exciety** describes a neologism as combining the anxiety of missing out on something or knowledge with the emotional aspect of being excited about the right information at the right time. The aspect is further described in Section 4.4, but is already outlined as one of the major emotional driver of Mobile Moments.

The following findings and discussions outline even more aspects and insights into the practice of mobile business. The aforementioned highlights already provide some expectations of the upcoming findings, but are herewith only described on their surface. Details on these, as well as on additional outcomes, are further elaborated and interpreted as part of the following sections.

4.2 Initial perspectives and themes on Mobile Moments

The theoretical data analysis approach, as outlined in Section 3.6.4, provides a guide through the actual analysis of the data collected during the main study (see Section 3.6.3).
For the purpose of illustrating the major findings and within the right context, this section combines the presentation and discussion of results per theme. This structure allows the research questions and the cognitive model to be kept track of and reflected on in direct reference to the study's results. This also aligns with suggestions about presenting results of a thematic analysis as part of qualitative research (Ruggunan, 2014).
The following interpretive and descriptive codes have been identified in relation to four major perspectives, to be elaborated in Section 4.3. In the upcoming sections, these are analysed in terms of their definition, relevance to the study, interpretation and relation to each other (see Table 4.2). As a note, the categorisation into overarching themes follows in Section 4.4.

Perspective (Initial Theme)	**Interpretive Code** (Axial Coding)	**Descriptive Code** (Open Coding)
Consumer	Descriptive Mobile Moment	"Wow"-Moment, satisfaction, reaction, not-being-lost, something bigger, independency
	Mobile Moment experience	Unnoticed, unexpected, social perspective, environment
	Push and pull	Automation, relevance, organisation, situative, overflow
	Triggers	Lookout, attention, interest, awareness, restless, resistance, curiosity, anxious
	Phantom triggers	"Exciety", unconscious, confession
	Cognitive setting	Eye-catcher, natural, time, ease, visuals, details
Worker	Device location	Fingertip, in-reach, off-time, need, codex
	Common etiquette	Disturbance, equalisation, importance, respect, provocation, interest
	Roles	Acceptance, responsibilities, connection, boredom
	Expectancy drivers	Expectations, confirmation, stress, lookout, involvement
	Conscious interactions	Control, intention, awareness, action, dependency
	Unconscious interactions	Consumption, unwanted, urge, forces, unknown, psychological, necessity, passive
Colleague	Reflection and awareness	Disconnection, frustration, attention, respect, temptation, disinterest, catch-up
Strategist	Business value	Outcome, action, information, useful, help, value, goal

Context-awareness	Safety, double-edged sword, right time, ease, automation, simplification, efficiency, humanity
Positioning	Subset, replacement, spontaneous, experience, business value, patterns, individual, time, ethical
Cognitive drivers	Motivation, illusion, interest, curiosity, personal, emotion

Table 4.2: Identified descriptive and interpretive codes (Source: Author).

4.3 Findings per initial theme

In order to organise and illustrate the themes, the four earlier mentioned perspectives (consumer, worker, colleague and strategist) are taken into account. They structure, but do not limit, the findings into four major groups. These groups or perspectives go back to the initial thoughts about tangled roles within mobile strategy consultancy as described in Section 1.2. A differentiation between various viewpoints allows a broader comprehension of the outcomes, their reasons and also their effects within mobile business. In fact, the consumer perspective describes the personal experience of unregulated interactions with mobile technology.

In this context, the individual is entitled to use mobile technology for personal purposes and goals. In contrast, a mobile worker's primary intention remains achieving organisational value and goals, as described by job performance in Section 2.8. The colleague's point of view extends the mobile worker's perspective, with social and ethical relations. Intention is to understand and apply certain mobile behaviours, which raise an overall awareness of mobile interactions, described by the study's findings in Section 4.3.3. The strategist's perspective links the three other perspectives into the consultancy context. By taking advantage of the SME's professional expertise, the acquired knowledge can be located within the overall business context (see 2.2).

As one of the findings, the participants have also been asked to identify themselves based on the given groups. As a result, most of the senior and client-facing interviewees perceive their actions and activities as part of their role as mobile strategist.

The more development and hands-on driven SMEs, although quite senior in their profession, feel more related to the mobile worker perspective, since they mostly use mobile technology for their individual business purposes instead of providing consultancy on it.
Additionally, all of them see themselves as a mobile consumer and colleague, since they actively use their mobile devices in private and in business.
Due to these perceptions, the roles of expertise, as shown in Table 3.2, reflect the most distinguishable self-reflection between a mobile worker (and colleague) and a mobile strategist. Nevertheless the distinction of perspectives is based on an underpinning assumption, that a mobile strategist is built up from a colleague's, worker's and consumer's perspective at the same time. The expertise forms the user's most prominent area of knowledge in consultancy, appliance and usage. The perspectives are summarised in Figure 4.2 and taken forward as an initial grouping to get hands on coding.

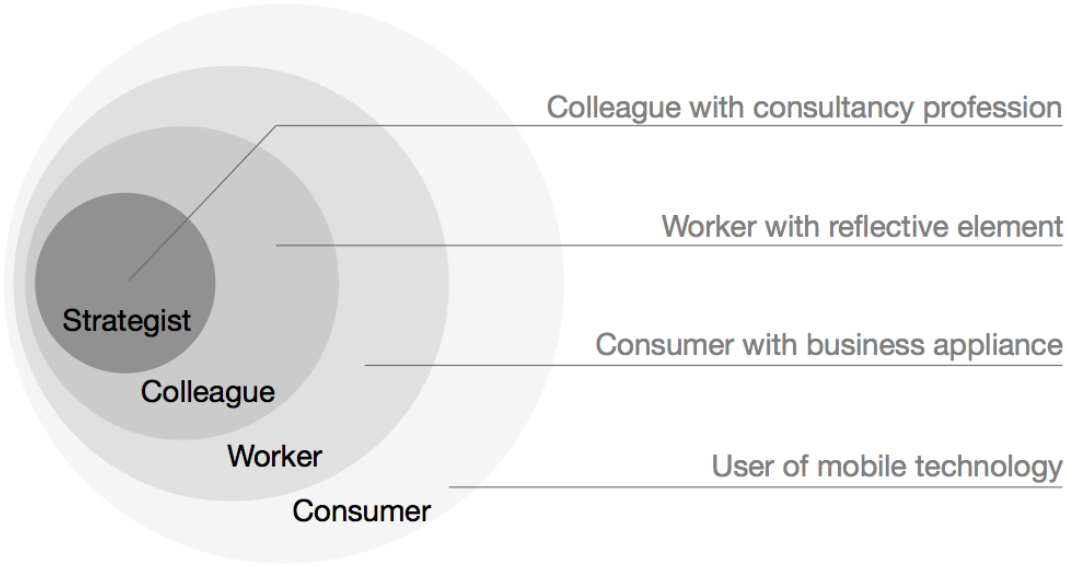

Figure 4.2: User perspectives used by study (Source: Author).

Coming from descriptive codes (open coding) derived from within the four perspectives, the upcoming findings are clustered and moved into interpretive codes by using axial coding techniques. Identified and interpreted relations between codes, research questions and the cognitive model form and precondition the later identification of overarching themes. The themes go beyond and are not limited by the four initial perspectives. As a note, each of the upcoming findings includes a short description, which also outlines the identified relations to other interpretive codes.

These relations are highlighted by an *italic* notion and are summarised as part of the big picture (see Figure 4.3).
The primary aim of the upcoming interpretive codes is to identify and connect them. A first linkage into theory will be provided but detailed relations and discussions of existing theories and models follows consecutively as part the overarching themes in Section 4.4.

4.3.1 Consumer perspective

The consumer perspective describes the personal experience with mobile technology. It allows a better understanding of the consumers' expectations and self-awareness of their daily interactions with Mobile Moments and related social interactions. Focus resides in the private, non-business context in which a mobile device is used to achieve personal goals. As a consumer, the user is free in terms of usecases, purposes and interactions of when to use mobile technology. It provides an insight on common behaviours, ideas and habits in today's mobile environment. In relation to the theories discussed earlier, findings are based on personal experiences, which define the individual's characteristics and personality.

Descriptive Mobile Moment

The first and reoccurring theme provides a glimpse of the perception of Mobile Moments as a consumer and how this moment is identified. The respondents show a personal relation to specific moment and device and relate to feelings and attitudes in perception. The following interview excerpts represent the respondent's early thoughts on how they would define a Mobile Moment for themselves:

> *A Mobile Moment for me is the feeling of not being lost, I am part of something bigger.*
> (Interview: Respondent A)

> *It is basically how dependent I am on my mobile devices, where everyday life happens. How it has changed my behaviour, my actions. Because before, life was different, because now, that you have a computer in your pocket, everyday life has changed.*
> (Interview: Respondent B)

> *I have a "wow" moment that's what I call a Mobile Moment.*
> (Interview: Respondent D)

> *So it is putting some emphasis on what people would expect from the device, what it can do, what they are expecting. What their satisfaction is with what*

they are seeing and yes things like that.
(Interview: Respondent E)

For me, I would say, the experience can be different. In one case a mobile moment might help me do my job hands-on in the field, in another it might support me at the office or in private. I think the usecases are quite different.
(Interview: Respondent F)

So the core concept about Mobile Moments. So what I understand is more to do with how a person reacts when, what kind of interaction he needs [...] independent of his current location, time or task.
(Interview: Respondent E)

As the sum of definitions highlight the personal aspect of Mobile Moment, such as making the user part of something bigger, regardless of their current location, time or task. It also describes the process of how behaviours have changed by this dependency on the device. Although these definitions come up from a mobile consumer's perspective, they also advocate the concept of Mobile Moments in business.
By stating this, further conceptual connections to the personal *experience*, *emotion*, *expectation* and *satisfaction* in use are comprehensible based on the examples given. The dependency of how and to which amount a mobile technology or Mobile Moment supports the user during their everyday work strongly depends on their *job role* should also be noted as Respondent F suggests. The mentioned "wow" moment gives a glimpse of the experience and positive attitude during a mobile interaction. This relates not only to the initially introduced concept of "aha-moments" as described in Section 1.3, but also to the satisfactory factor coming from the cognitive model of Mobile Moments (see Figure 2.10). With the subjects describing their personal moments, the overall motivation of this research becomes more eminent: It supports the idea that Mobile Moments already appear in the user's daily life unconsciously, but with a conscious thought about it, it does make sense in a reflective and self-aware mindset. Participants explain their comprehension of Mobile Moments and appreciate the conscious experience for themselves and people around them. This gives a first indicator of the practical contribution of the model by an increased awareness of the topic itself (see 1.7.5). In fact, the description as well the experience of Mobile Moments (see 4.3.1), combine the individual's perception as well as articulation of the same. The findings summarise the overall intention of the research to identify, understand and transfer the concept into business practice.

Mobile Moment experience

The understanding of Mobile Moments is the continuous challenge between the need, the expectation and, even more, the awareness at the point of a mobile interaction. It is not always obvious why and when a Mobile Moment occurs in the private sphere and it is even more difficult to understand, what impact the user's surroundings have in relation to the perception of such a moment. The respondents try to explain their personal experiences based on examples:

> *One such small incident is, usually on Friday evenings we are going on family dinner and I was planning to go for a restaurant, which is like three kilometres away from my home, I picked my mobile and we were just starting, I got a message from that store saying they have an offer for me. So before I even go there, there is analytics running in the background to identify what are my patterns in eating out and there is an offer which is sent to me. So that was quite exciting.*
> (Interview: Respondent D)

A similar experience comes also up during further interviews, explaining, that something appreciative and helpful triggers the user without any notice.

> *I think I was taking a train to somewhere, where the app was kind of triggering something saying, there are changes in the schedule, the train got rescheduled, so in that case I had to re-plan. So basically the device triggered lot of stuff, where I had to kind of do it.*
> (Interview: Respondent C)

It is also interesting to see, that the perception of such an unexpected event differs between the respondents. All of them appreciate the information itself, but on a different level. Respondent D explains

> *Somebody is waiting for them, from a social perspective.*

whereby on the other hand, a technical curiosity aims for explanations

> *But it depends on the interaction and connection to all the environment around mobile. [...] So, the interactions with all the components around makes the mobile or the smartphone itself more important and necessary.*
> (Interview: Respondent H)

> *So we didn't even book a table out there, but the analytics part in the background, someone trying to identify what is my eating pattern, of how frequently I go out and in which areas I go.*
> (Interview: Respondent D)

The experience of such moments strictly relates to the subject's definition of a Mobile Moment and where they put more emphasis. On one hand, there is the highlighting of the wow-effect as a positive attitude, on the other hand, there is the expectation from the device and whether the moment can fulfil this. The examples given show the consciousness about Mobile Moments happening around them already, especially in private. The upcoming themes of *push and pull*, *cognitive settings* and especially the *triggers* are foundations to understanding how Mobile Moments work and how they are experienced by consumers. Additionally, the more technical perspective should not be missed. Respondent H suggests that the mobile device or Mobile Moment is highly dependent on the components and *information* available. The necessity of sufficient data to be transformed into useful information by analytics is therefore a very important precondition. The subjects' experience gives an insight into the practical understanding of the so-far-theoretical concept of Mobile Moments. Section 2.5 describes the characteristics and generic definition of the concept, which can be applied and perceived in several ways: It could be whenever a habit might trigger a specific behaviour (Respondent D (a)), wherever the user is currently located (Respondent C) or whatever raises their curiosity or expectancy (Respondent D (b)).

Push and pull

Different interaction styles of data acquisitions are a prominent finding from the study. Although Mobile Moments are, by earlier definition (see Section 2.5), mostly aiming to support the user, without them explicitly asking for that, the consideration and preferences especially as a consumer in private are different. On one hand, so-called "push notifications" provide data to the mobile device, triggered by the data source, on the other hand, the user might explicitly "pull" for such information, asking for updates. However, this is not a one-or-the-other scenario, the responses show, that there are different expectations, also based on the data's intention and the context used.

> *Sometimes both, sometimes I might get a facebook notification or something has happened, or sometimes I might be expecting some mails, so I will some kind of regularly checking the mails to figure out that something has happened.*
> (Interview: Respondent C)

Several approaches from the user perspective are possible. Either allowing everything to come to the device automatically, or manually ask for data explicitly or the respondent's most prominent way, white-listening, which allows the user to set filters for incoming information:

> *I focus on my main daily task and my information which is relevant for my daily work. And for this I use push notification, it will help me to organise my day, but all the other things, I think it is too much information overflow.*
> (Interview: Respondent H)

> *It is more like situated. It just comes along whenever.*
> (Interview: Respondent A)

It is interesting to understand that there are differences in the personal appraisal of pushed information. In some cases the user might experience a feeling of information overload. The feeling of overload relates explicitly to the natural limitations, as described in Section 2.7. Hereby the cognitive capacity and concepts of sensory, processing and attention are tangled with each chunk of data perceived (see data vs. information in Section 2.6). An overload is, therefore, especially driven by the occurrence of - for them - currently unwanted information, which the working memory needs to process unnecessarily in order to define its value. However, on the other hand it also shows that the right information at the right time, can be very supportive to a user's current aim within a work scenario. The latter statement is highly appreciated by the respondents in general because it is pushing the *satisfaction* factors of mobile experiences. In addition, the respondents also agree on, if they are on a particular lookout for help or input, they usually pull information instead of expecting to receive it automatically. Similarly, they are also highlighting that they are less restrictive on pushed *information*, if these are related to their personal business goals. Finding the *balance* is in this case the most important factor. The key is to find an appropriate level between providing the right amount of information to be supportive rather than hindering the user in their action due to information or data overflow.
This aligns with the shift of mobility and Mobile Moments to understand what the user might want to do, before they are actually doing it. The concept relates to the organisational need and expectation, also touched by *business value*, *context-awareness*, *cognitive drivers* and *conscious interactions*.

Triggers

To better understand the behaviours, intentions and triggers of a mobile consumer, the study reveals different drivers for mobile interactions. In the following, participants are aiming to explain why they touch their mobile devices in certain situations, by using psychological assumptions.

> *So, typically if I am under lookout for some sort of message or if I am expecting something, then my mind is tuned for a message or, yes typically a message. Then I am exposed to that situation. And if I have my device handy and something shows up on the lock screen, that automatically catches my attention*
> (Interview: Respondent B)

> *I think it is by interest. I am pushed by interest. Every person is interested in everything [laugh] and for me its the same, I will then have a short look on what is going on.*
> (Interview: Respondent H)

> *[...] maybe they are not aware compared to some of their colleagues, who got more information compared to them? Kind of being a little bit restless about, I need to be updated with the latest data all the time.*
> (Interview: Respondent C)

> *Something is going on! Typically sometimes I can resist, if I know it probably a response to my previous message but more often it is curiosity to find out what's going on.*
> (Interview: Respondent A)

> *The fear of missing something. The expectation to be available.*
> (Interview: Field Notes Respondent E)

Curiosity, expectations and being restless about information, and it goes even further into the emotional bond again

> *I do feel anxious if I am separated from the device. Because I feel like, somebody might be looking for me.*
> (Interview: Respondent B)

> *It is kind of restlessness, they are looking for something but they are not sure what.[...] it is turning into a habit, they just want to see something but they don't know what to see.*
> (Interview: Respondent D)

Those thoughts on triggers provide some user experiences about starting an interaction with the mobile device. It illustrates some key drivers in conscious and unconscious interaction described from consumer and also mobile worker perspective. On one hand, the respondents talk about curiosity, interest and, especially, restlessness describing their inner urge to interact. These are indeed very interesting cognitive factors which, combined with a professional setting of expectation and competition, are becoming a highly emotional setup. Respondent B even mentions feeling anxious if they are separated from their mobile devices. This refers also to the already identified emotional bond between the user and their mobile devices. In this way, the factor of *emotion* connects with actual *habits* and usage of mobile technology as a mobile worker.
The aforementioned keywords curiosity, expectations, restlessness and anxiety also seem to draw a bigger picture, merging the earlier proposed different experience of *conscious* versus *unconscious interactions*: Subjects refer to the keywords in either way, by the unconscious feeling of missing out on something, as well as the conscious demand for new information, linking to *push and pull*. The code also relates to the *cognitive drivers* and *setting*, aligning with the SME's thoughts on what has driven them internally, extending their personal *experiences* and what the *expectancy drivers* are for that.
Triggers, as well as the *phantom triggers*, are the practical descriptors of the earlier introduced cognitive model of Mobile Moments, as derived in Section 2.11. The combination of emotion, expectation and cognitive setting can be reflected against the introduced cognitive drivers: The expectation of support interprets the occurrence and availability of an effective, efficient and goal-oriented mobile interaction. Although the interaction could be characterised in that way, the recipients focus more on the emotional aspects such as the satisfying feeling of being informed or needed (Respondent B and C). Interestingly, the context of use or the actual type of device is not of primary interest, as the interviews have shown.
Anxiety, interest and expectancy are highlighted in terms of the user's emotional standpoint and link back to the individual's fundamentals described in Section 2.10.1. Nevertheless, all aspects of the cognitive model can be referenced, when defining a particular Mobile Moment. Some more of value, some less, depending on the scenario. As an important finding, the study therefore shows that not all elements can be weighted the same in every situation, extending the meta information of the developed cognitive model (see 2.10.2). It rather describes an emotional setting towards the supportiveness and personal assistance of a mobile interaction based on the individual's needs (refer to 1.7.5). Cognitive motivation, performance and satisfaction provide the underpinning themes to understanding the (phantom) triggers in practice. A combination of attitude, skills, goal-setting and other behaviouristic aspects drive the understanding

of the respondents' demands and desires in private but also in business (see 2.8 and 2.9).

Phantom triggers

Another representative phenomena of the bond between the user and their device are so-called phantom triggers or phantom vibrations. The study shows an interesting high level of acknowledgement to illusive triggers. The phenomena represents the deceptive perception of an incoming alert and the associated interaction with the device. It describes the user's perception of a device vibration or audio notification, although there wasn't any by the device.

> *I must admit that I have that as well. So I mean when you are wearing your phone in your pants, you feel the vibrations before you actually hear the sound, so I actually did had this phenomena of phantom vibrations, I thought there is something, but then it didn't start ringing or so.*
> (Interview: Respondent E)

> *Yes, I did, but not often. I am not a big fan of messaging, but I feel it in calls. Sometimes I get a feeling that I am getting a call and I check, but I really didn't get one.*
> (Interview: Respondent D)

Some respondents also immediately try to explain, what might have driven them to experience this imaginary trigger:

> *I think, that is the exciety (excitement plus anxiety), that now is the side effect of this whole mobile attachment. And your constant attachment to the world. That causes exciety, so if there is a period of time, that there is nothing going on, you automatically go and check, because you think there was something. It is not normal that there is this window of time, where you didn't see anything. And you do it unconsciously, that is not the conscious tribute.*
> (Interview: Respondent B)

> *Yeah, occasionally I do, but I think that's more kind of a result of trying to be online all the time.*
> (Interview: Respondent A)

All of the interviewees agree that they experience phantom triggers once in a while. Respondent B comes up with an interesting concept, combining the excitement of being connected to the world at any time with the anxiety of missing out on something.

This double-edged sword experience they call "exciety", which is definitely a neologism to take forward. It extends beyond the earlier mentioned common *triggers*, and point to the deeply intimate *emotional* bond to the device once again. For phantom triggers, there are *unconscious interactions* involved, stimulating the user's perceived need for interaction with their device, driven by *habits* or their personal *expectancy drivers* (refer to Section 2.9 and 2.10.1).

Cognitive setting

In order to better understand how Mobile Moments may trigger cognitive activities, a view on the perceptual preferences provides some input on the preferred process to transform sensory data into meaningful information. Consciousness of this topic is also something, which advocates the subject matter's expertise against a casual user of technology. Respondents provide and extend their personal preferences about the cognitive setting with some further thoughts and suggestions.

> *So I personally think graphics are typically a very good vehicle to convey something, to see the overall picture, patterns and structures. But then the details really are in the text. But I think from my personal view a graphic or images, they should be in the lead then. I see it in flipboard, whenever I go through "oh hey, there is a picture, what does it mean?", so what is kind of the headline there and I will decide if I want to read it or not.*
> (Interview: Respondent A)

The other respondents argue in a similar way, according to their personal experience and preferences. For a short and quick interaction or trigger, images are usually perceived faster and more comprehensible:

> *Depends on the subject. If it is a detailed subject, well naturally images are easier for any human being to comprehend, if there is a topic you need details, then you do set aside time to actually read text, detailed text. But if it is just something that can be explained with a picture, yes I prefer that.*
> (Interview: Respondent B)

In order to convey overarching topics and initial ideas very quickly, illustrations as short headlines and images are suggested by the respondents. This aligns with the cognitive model describing the difference between perceiving and processing visual-oriented or phonologic-oriented data as elaborated in Section 2.7.2. The phonologic perception shows advantages in understanding the in-depth details, whereby the visual-oriented

consumption provides high-level and abstract understanding. The interviewee's tendencies may also already propose the requirement of Mobile Moments is to be easy and quick to perceive. Respondent A also mentions that the right and simple vehicle of data is a very good driver for curiosity and interest. This shows the close relation of the cognitive setting to the overall *triggers*, advancing the perception and processing of business relevant information, creating *business value* by *simplicity*.

4.3.2 Worker perspective

The worker perspective moves the focus from the casual and leisure-oriented perspective to a work related one. As part of a mobile workforce, intended goals of using mobile technology are usually shifted into the entrepreneurial context, aiming for job task completion and availability. Upcoming codes describe the current usage of mobile technology in business as well as the perception of Mobile Moments from an employee's perspective. The participants provide insights into their daily mobile practice especially in field working and consultancy-oriented industries.

Device location

Personal experiences on how to work with mobile devices during the daily job, provides insights into potential habits and expectations. In the following responses, participants explain paradigms of mobile work within their actual work environments. For the purpose of comparability within personal experiences, a simple meeting-scenario has been proposed to the interviewees. The scenario describes a team meeting of a couple of colleagues in a reserved office location, which they are taking part in.

> *Most of the times I have it on the table.*
> (Interview: Respondent H)

> *Usually, yes, it would be on the table or it would be in the shirt pocket or something.*
> (Interview: Respondent C)

> *I always have my eye on what is going on. Like depends on what is going on, like right now, it is an off hour, I should be somewhere else, so I automatically have an eye on what is going on, in case where ever I am supposed to be, they need me.*
> (Interview: Respondent B)

> *In a usual meeting, I would have it in reach. Like on the table right next to me.*
> (Interview: Respondent F)

Responses show the physical proximity of the device during the day. Having "an eye on what is going on" (Respondent B) illustrates and highlights the *expectancy drivers* as well as the *expectations* from their job. Explanations reveal some kind of *habit* or "codex" from a mobile employee to be available and this is reflected by the user regardless of time and location: The respondents mostly feel the urge to be available all the time, because there might be a request for them. These habits also refer to the current expectation and practice of mobile strategy. In Section 2.3 consumerisation is one of the mind-shifting aspects, describing the personal urge to interact seamlessly and independently. In addition, the continuous availability and possibility of focusing on multiple topics at the same time also links to the initially introduced scarcity hypothesis (see 2.1) as well as Garhammer's approaches to handling the shortage of time in delivery (see 2.5).

Common etiquette

Another interesting idea coming from the interviews is that there are device-related actions, done purposely, which are supposed to be appreciated by others. The subjects refer to a kind of mobile etiquette in meetings.

> *It depends, so in a client meeting, especially like with important clients or new clients, I will always turn it off. Before the meeting, if I don't forget it, I will turn it off, because I really don't want to be disturbed. In a meeting with colleagues or with customers I am well equalised with, I will leave it on, because it might be important enough to even disturb the meeting. [...] I think there was an etiquette which had to evolve over time*
> (Interview: Respondent E)

> *If it is really a face-to-face meeting with the client, I fly out to that meeting, it shows a deep disrespect obviously. Somebody checks his phone in the middle of the meeting although you think you got the interesting or important topic and you need everyone's full presence and they check their emails for no apparent reason or are playing with their phone, whenever it happens that is deeply annoying.*
> (Interview: Respondent A)

> *The act of putting it aside might also be an act of showing his interest.*
> (Interview: Respondent B)

Working with mobile devices represents a common business environment, especially in consultancy areas. Over the last few years, an etiquette emerged from behaviours

during, for example, business meeting scenarios, as the respondents mention. Not going into too much detail on cultural differences, but interactions with mobile devices have become a standard within meetings and most of the respondents are fine with it. They appreciate the requirement of being available to important disruptions, also in relation to themselves. However, most of them agree that this is a highly sensitive topic, since it is easy to send subliminal messages by actions. It might be boredom, disinterest or even disrespect, when interacting with the devices during such situations.
It can also be the other way around, where some actions like blocking or muting an incoming call might result in positive messages of appreciation. *Habits*, also in terms of the *device location* and *expectations*, are a very important and recognised driver of this common etiquette. The respondents also mention that those habits have evolved from social experiences in the last couple of years. The subliminal message of, for example, paying attention, showing respect or appreciation is one of the key findings from the common mobile etiquette.

Roles

A further influencing factor has been brought up by several respondents in terms of the meeting role they are impersonating.

> *In case of participating, ok, then I might always have a look at it. It is totally different. Sometimes it can be not so comfortable for the meeting leader [host], I feel the same, when I am the meeting leader, but I accept that, because I think the daily work implicit these kind of interactions and it is not possible to say, ok it is not allowed [to use phones], because we have responsibilities especially with our clients and yeah, to meet the responsibility you have to be online all the time.*
> (Interview: Respondent H)

> *When people are not so connected to the meeting, then they might fiddle with something on the phone. Or if one person is working as a supervisor and he is expecting something to happen.*
> (Interview: Respondent C)

But it also comes to a point where other factors are more important and take over.

> *After 2 or 3 hours for sure, everybody is going to check his email, because everything is so important. That's kind of boredom and lost in the meeting, typically then what else is going on, what else is interesting for me? I think that is just a natural thing to do.*
> (Interview: Respondent A)

Quite similar to the previously mentioned *common etiquette*, the user's role within such meeting plays an important factor, on how to deal with actions of others. The subjects agree that in today's work environment, they have to accept the fact of meeting participants interacting with their devices. And as a meeting leader, they usually do not try forcefully prohibit this, since they acknowledge the same natural behaviour in themselves, when they are "not so connected to the meeting" (Respondent C). The notion of a "natural thing to do" (Respondent A) or *habit* is something to take from here, as it shows some deeply anchored statement of admitting mobile interactions in daily work.

Expectancy drivers

Expectancy drivers are a way to further understand, what could drive a mobile worker to change the focus of their attention from the current context, like a meeting, to something on the mobile device. The underpinning question asks what a user might expect from a Mobile Moment to gain their attention. With the same aim, it also includes the cognitive perspective, demanding internal expectations to be open for such moments. The subjects are proposing different potential psychological explanations.

> *He is expecting something happening, he might be checking the status of the job on his phone, if the things have been done.*
> (Interview: Respondent C)

> *It really depends on which kind of information you are actually looking at. So if it is something you have to react to, something that asks for your active involvement, things like answering an important email, that is kind stressful: I have to respond to this.*
> (Interview: Respondent A)

> *There is also another factor that I mentioned earlier on, if I am on a lookout for something, I am waiting for something, like an email or message I have been waiting for, then my brain is much more tuned to checking and looking, anxiously!*
> (Interview: Respondent B)

The most prominent driver described by the respondents is to be tuned to some incoming queries or information. The *expectation* of receiving something important directs the user's attention to the device regularly. The value of "something important" is hereby defined as the adequate *information* (see 2.6), sufficient to start an interaction. The conscious feeling of being needed for something plays a key role in work relations and has also already been mentioned in *cognitive drivers*. Responses also show that

expectancy drivers are more likely to be a combination of the cognitive drivers and the expectations set by the *job role* to provide and generate *business value*. This relation has been discussed in the earlier Sections 2.8 and 2.9 and supports the existing theory. The aim to be of value as an employee is driven by the job role and defines the expectancy drivers for the employee. Through this cognitive setting, it becomes one of the most important facilitators for the overall understanding of *triggers* for mobile business interactions (see 2.4).

Conscious interactions

The split up between conscious and unconscious (see Section 4.3.2) interactions is based on the user's awareness of a particular activity. The conscious activity draws the user's attention while they have a particular aim. Subjects describe this kind of interaction as follows.

> *You have to be in control! Because you have to dig into that, you have to think about it, you have to find the issues typically when you are doing a review and you have to write back the flaws you did identify.*
> (Interview: Respondent A)

> *So the user has to go and check a machine status, or the user might has to do something to change some data.*
> (Interview: Respondent C)

> *It depends, sometimes you pull out your phone to make a call or start a gaming session, or to look for directions where the hotel is.*
> (Interview: Respondent E)

"You have to be in control" (Respondent A) proposes the most important factor of conscious interactions. It is not only about the interaction itself, it is even more about the cognitive awareness of it. It is quite interesting to understand, that respondents do have a good impression of what conscious interactions are in their daily life. But as already mentioned by *triggers*, and, as an important surprise of the study's findings, common triggers of both kinds of interactions form the majority of *cognitive drivers*. This makes a distinction between *conscious* and *unconscious interactions* less important to the understanding of Mobile Moments in the sense of identifying triggers, as opposed to earlier assumptions and in relation to the *push and pull* of data.
The difference in the interaction itself remains as a potential distinction between conscious and unconscious actions, although their triggers are similar. The cognitive background on consciousness and attention was introduced in Section 2.7, which initially

suggested the distinction as well, but with further insights from practice the theory might require some variability in terms of mobile business interactions (see 2.4).

Unconscious interactions

In contrast to the conscious interaction (see Section 4.3.2), the unconscious activities can also occur during moments, when the mind is tuned for other activities and the user is subliminal interaction with their mobile device.

> *But when I am looking for my email, I am also using it by intention. I am looking for that mail, and I might see some other information, for example, an advertisement. I mean the whole commercial advertisement business is around making people look at something, read something which they don't really want.*
> (Interview: Respondent E)

> *So just checking for some data. For me it is just to check some emails obviously. So if you just don't even want to do it, but you are drawn to the phone. "Ah there must be some emails or anything I am missing because I am so important". That might be a case. [...] You are driven by this inner urge of missing something.*
> (Interview: Respondent A)

> *Difference between "consuming" information or feeling the "force to respond" which is way more stressful.*
> (Interview: Notes: Respondent A)

These findings illustrate the individual's unconsciousness, however, there might be a further definition of unconsciousness, representing those processes, which happen subliminally to an interaction.

> *At least I believe so, I mean I am aware that there is a lot happening unconsciously, there is a lot happening without you even knowing it. All the stuff with geofencing and things like that, I mean, I don't know who in the world knows that I am in this room now, just because the phone is still turned on. So there is probably a lot happening but they are not psychologically unconscious but really unconscious in the sense of you don't really know.*
> (Interview: Respondent E)

Prominent drivers for unconscious interactions are especially *habits* or *expectancy drivers*, which is quite similar to the conscious drivers. However, the actual activity differs in its characteristic. The user is not aware of their internal processing of data (see details

on processing in Section 2.7), even though their mind is able to consume *information* (Section 2.6), which could also be of *business value* to further actions (Section 2.4).

4.3.3 Colleague perspective

In anticipation of the findings, a colleague's perspective provides a slightly judgemental viewpoint on mobile interactions, especially as a mobile worker. By reflecting the behaviours of others, it provides further insights into the perceived mobile experience and the previously mentioned common etiquette (see Section 4.3.2). This short section mostly provides some additional experiences on the codes mentioned earlier. The important difference is the subjects are not talking about themselves.
They are providing some experiences projected or perceived on colleagues, which potentially reduces the level of pudency within their self-reflection. In addition, the findings show an interesting extension: During and after the actual interviews, the participants refer to a higher level of awareness about mobility in their everyday life. They mention mobile behaviours of their colleagues, which they have not noticed before due to the questions discussed in the interview. Furthermore, they are taking these into their personal considerations, on how they interact with mobile devices personally, and raising overall awareness about mobile behaviours.

> *Yes, so if a person is checking his mobile device every five minutes, even if he doesn't get a call or a message, that puts me off. But if there is a call or some message, that diverts the user's attention, I am kind of ok with that.*
> (Interview: Respondent D)

> *Well, that is not just colleague, there are times where I find, whoever I am talking to, I need somebody's attention and they are engaged with their device. Completely disconnected, I find that very frustrating. So, yeah definitely. And it does happen a lot, especially with the younger generation [...] But there have been times, where somebody has apologised for getting distracted for a second. Or when I see people setting aside, not just mobile devices, even the laptops and putting themselves into the conversation and showing their mood of being very attentive. I do appreciate those. Especially if I am the provider of information and see my recipients respecting me.*
> (Interview: Respondent B)

> *I mean obviously it is very tempting. Like I said, if you are getting bored, it is a very small step to start reading something, it is much less, it would be a much stronger offence if someone would pull out the newspaper or stuff. People sometimes think it is less offence to just check their mails, but actually it isn't.*
> (Interview: Respondent E)

> *Definitely, boredom, disinterest and it depends on the meeting. Even ourselves I think. We also have got this bad behaviour when we are just bored after a long meeting and the meeting just goes somewhere and we think does this really add any value or does this even affect me at all, am I lost in the meeting? And then typically we also react with this kind of behaviour*
> (Interview: Respondent A)

Also again the experience of the meeting-scenario shows common behaviours:

> *Before (!) they leave the door they are catching up with their mobile and looking for what has gone on in the meantime, definitely. Everyone! I think there is no person, who goes directly into discussions with others to do whatever. Everyone catches up with his mobile and has a look at it.*
> (Interview: Respondent H)

> *Yes, because if they have to participate in these meetings, of course their interaction with the mobile will be limited, or they might even not using the phone at all, because they are busy with the meetings. Where, as when they come out and they expecting something like some work to be done or some text message, they will pull out their phone and check the status. So they will be using it more, when they are outside on the coffee break.*
> (Interview: Respondent C)

As seen by the responses, the topic can become quite *emotional*. Either positively, by appreciation, but even more compelling as negative experiences in terms of rudeness and personal disrespect. Moreover, the experienced "relief" by the participants of a meeting, when they are stepping out of the door and take a look at their mobile device, shows quite some common behaviour, including its relation to the *etiquette* but even more to the *cognitive drivers*. The difference between different *job roles* has also been mentioned, for example, as a difference between consultancy or back-office roles in comparison to field working workforces, where such meeting oriented behaviours represent only minimal impact on practice.

4.3.4 Strategist perspective

The strategist perspective suggests and proposes ideas and expectations based on the SME's experience within mobile strategies. Assumptions on how Mobile Moments could be part of future mobile strategies and some ethical considerations are also part of this perspective.

Business value

As part of early discussions (see 2.4) the definition of business value has been identified as a crucial factor for opportunities within mobile strategies and their appliance. The respondents provided their argumentation on what they, as strategists, would see as a value in the individual's performance. There is a small but important difference of valuing a perception of information and the actual interaction with it:

> *If the information is fed to me and there is no response expected, then just seeing it, that's a business value. The outcome of seeing it may not be a message, maybe a "go do something", so just seeing it is a business value.*
> (Interview: Respondent B)

> *I think it is important for me to get the information ok, there is something there. Ok, I have to decide, is it so relevant for me that I have to look into it or not. [...] I think it is a win-win situation for both, from my business perspective, I think it is a new area where we can provide solutions for the clients.*
> (Interview: Respondent H)

> *As long as he sees it, I think there is a value.*
> (Interview: Respondent D)

> *I think sometimes, even giving out the right information will help sometimes. Because he might not even know what is happening on the other side.*
> (Interview: Respondent C)

The responses suggest that a business value can also be achieved by the perception of *information*, rather than the need to interact with it. This finding is an illustration of how "being-informed" is one of the most important expectations as a mobile worker, even if there is no particular action associated with it. This also comes from the definition of cognitive motivation, as introduced in Section 2.9, explaining the need-based as well as human and business motivation. Some of the subjects even go a step further and describe that they would expect more information to be *pushed* to them, even if it is currently not relevant to them. Being informed and in charge of the decision, whether some data is of value to them or not (see 2.6), is an organisational as well as personal *expectation*. Nevertheless respondent C also highlights the "right information", which needs to be given to a user, and which determines the value of a specific chunk of data.

Context-awareness

Context-awareness is a technical combination of multiple components, such as location services, analytics and sensors, to let the device know its current surroundings and thematic context (Lovett and O'Neill, 2012). It is not limited to geographic information but represents the overall concept of context-oriented data and information. There are multiple interpretations by the recipients, mostly differentiated by the area of occurrence.

> *Mobile context awareness is you have different apps of mobile integrated, suppose your calendar versus your lunch breaks and everything. So if I am in a meeting, automatically the mobile switches into silent mode and if I am getting into the car, automatically the music starts. It is basically understanding where you are and what you are doing.*
> (Interview: Respondent D)

> *So as a physicist, of course I am thinking about like nuclear power plants with safety impacts. Of course people always wear these radiation collectors, but they can only tell you after the fact, like today you shouldn't have stayed that long", but a mobile device, which actually knows where you are might be able to tell you earlier. That was what I was thinking of.*
> (Interview: Respondent E)

> *It is always a double-edged sword. Immediately you see the applications of it, how it could simplify and add efficiency to the business life but then, it becomes just another way of taking the humanity away.*
> (Interview: Respondent B)

> *Information at the right time makes his kind of day to day work less complicated, like doing things rather means the mobile is taking care of such things. Like unconsciously, so I don't even have to type in, that this work order has been completed. It should kind of figure that out in some automatic way, ok this task is done, let me update the systems accordingly.*
> (Interview: Respondent C)

> *In case of the future I will see, or I will expect, that more cognitive aspects will come up, so I will get more personal content and that I will get more content depending on what I am doing or what I am asking.*
> (Interview: Respondent H)

The respondents refer to context-awareness as a "double-edged sword" or *balance* between user's privacy and supportive benefit (see 3.8). Interestingly, the line between work and leisure matters is mentioned quite strictly. Respondents suggest, that during work, location and context information are perceived as less intrusive to their privacy considerations compared to their time off. With a well published organisational guideline on work-related context data and its collection, the respondents mostly agree that

they are ok with it. In addition, they highlight the positive impact of filtering relevant *information*, also mentioned as part of the concept of *business value* earlier, depending on the current usecase.
Respondents appreciate the *simplification* of the work due to supportive mobile devices, which already suggest *triggering conscious* next actions or *unconscious* tracking of security relevant alerts. In addition, respondent H goes one step further and suggests that context-awareness is going to advocate real personal content while strengthening the *emotional* bond between the user and their supportive device. Since the context is already part of the cognitive model of Mobile Moments, its relevance and background has already been introduced (see 2.10.2). The actual practice offers a further perspective, not only focusing on where the user currently interacts but rather using this information to optimise and filter the interactions in relation to the business value and potentially block unrelated information according to their current interaction (see Section 2.4).

Positioning

From questions on mobile strategy, there are also a few hints, on how and to what extent Mobile Moments could be part of future strategies. There is especially the comparison to traditional desktop environments and whether mobility is able to transform a few areas, but also admitting that mobile technology won't fit every usecase.

> *You can't replace, but it could replace a subset of those communications. But each one of these mechanisms would have its own place, like email would probably be for more elaborate exchange of data, as opposed to quick messaging through the messaging system.*
> (Interview: Respondent B)

> *Either in the consumer or enterprise world, the spontaneous expectation is, your device knows what you are going to do next. It is all about experience.*
> (Interview: Respondent D)

> *That would very much help to give you a better experience, and maybe even make more business value out of the mobile device. [...] There might be new usecases coming out of this cognitive and pattern-analysis field.*
> (Interview: Notes: Respondent H)

> *Yes, definitely, so they can think about the areas, where things can be done more efficiently, so instead focusing on the individual task, wouldn't it be better to look at the overall process at all and see how we can optimise bringing in the device? And you can even eliminate some steps and make the process more efficient.*
> (Interview: Respondent C)

> *I think it is going to be even more part of our daily life. It just is the development that everything has to be more and more optimised, so at least here in the western world, where people are relatively expensive, labour is expensive, so companies are trying to optimise the way they deploy their resources, their employees use their time, whichever way possible, whichever way is still ethical in a way will be pursued.*
> (Interview: Respondent A)

The SME outlooks and ideas suggest the boundaries of Mobile Moments in practice. As respondent B mentions, mobility and mobile technology will not replace every aspect of current work environments. All technology will have its own place in the construction of work, but other respondents highlight the characteristics of spontaneous interactions, flexibility and supportive experience. *Simplicity* and flexibility of interactions in combination with capabilities of *context-awareness* and analytics are becoming the major advantage of mobile interactions.
One additional important pillar within the concept of Mobile Moments proposed by respondent A, was to support their employees using their time in whichever way possible. It strives for fitting more value into a given timeframe (see 2.5) by being mobile and independent of location, time and purpose to fulfil demanding organisational and personal *expectations* while optimising the flawless *experience*. A proper and thoughtful integration into mobile strategies is mentioned as key argument in order to leverage, and not block, mobile business (see 2.3).

Cognitive drivers

Cognitive drivers are quite similar to the concept of triggers (see Section 4.3.1). Nevertheless, from a strategist point of view, cognitive drivers already bring in some further consultancy and suggestions on how to achieve physiological advantage from understanding the addressable impulses.

> *Actually the motivation can be very different; sometimes you pull out your phone to make a call or start a gaming session, or to look for directions where the hotel is.*
> (Interview: Respondent E)

> *Interest, curiosity might have driven the user to interact.*
> (Interview: Notes: Respondent H)

> *Satisfaction, expectation and addiction play an important role in Mobile Moments. Also boredom. In the future it is all about better experience, everything becomes more emotional and individual.*
> (Interview: Notes Respondent E)

> *I think that's the main topic: "Be more personal". Because my decisions are based on how I will personally be interested or addressed with things.*
> (Interview: Notes Respondent H)

> *I assume interest and the continuous striving or need for information is driving the user.*
> (Interview: Notes Respondent G)

Cognitive drivers are perceived and defined differently among the respondents. Some of them are looking for the *emotional* relation with being "more personal" in relation to interest, whereas others describe the concept of drivers by means of curiosity, *expectation*, *satisfaction* or even addiction or boredom to being involved unconsciously.
They also mention the heterogeneous drivers in motivation, which could be involved as a need for something as well as the "illusion of something happening"". The strategic view on drivers combines the concept of *triggers* with cognitive perception, and becomes one of the most descriptive factors of Mobile Moments: As respondent H states, "in the future it is all about better *experience*" and is also taken forward into the overarching pillars of Mobile Moments. Cognitive drivers combine every aspect of psychological and cognitive characteristics. Themes like personality, individuality and capacity are always coming up in discussions about integrating Mobile Moments into practice. Chapter 2 includes several aspects of cognition theory and definitions of business value, which could extend the respondent's arguments.
Interestingly, topics such as emotion, satisfaction and expectation are mentioned primarily and seem to be more present to the subjects compared to theories on goal-orientation and performance indicators (refer to 2.9). Taking this forward, the overarching themes will further point out relations within the drivers of individual mobile business interactions.

4.4 Overarching themes and relation to theory

The overarching view identifies themes of Mobile Moments and mobile interactions across the earlier introduced four perspectives. It aggregates from the coding process and transforms the findings into thematic groups. It is the major outcome of meaning-oriented coding and builds the bridge from practical experience back to the cognitive model and underpinning theories. The themes are a synergy of the identified codes, either being derived from the individual code directly or established by the relationship between them. In combination with the cognitive model, the interpreted codes and derived themes form the conceptual model of Mobile Moments which is aimed for by targeting the original research questions. The themes have been identified by their interrelations and interpretive importance from the thematic analysis and can be seen as a new hierarchy level, grouping initial codes into meaningful categories as shown in Table 4.4.

Theme	**Relations**	**Characteristics**
Information	Push and pull	Limitation of quantity,
	Mobile Moment experience	Sufficient data availability,
	Balance	Usefulness of content,
	Context-awareness	Informative instead interactive,
	Business value	Timing and balance,
	Cognitive setting	Visual and abstractive
Expectations	Triggers	Characterisation,
	Positioning	Workforce performance,
	Descriptive Mobile Moment	Consumer's expectation,
	Balance	Ethical impacts,
	Expectancy drivers	Mobile experience
Triggers	Triggers	Internal and external triggers,
	Phantom triggers	Drivers vs. characteristics,
	Emotion	Cognitive relations,
	Expectations	Knowledge and expectancy,
	Cognitive drivers	Motivation,
	Conscious interactions	Job performance,
	Unconscious interactions	Merge of interaction types
Emotion	Triggers	Exciety,
	Information	Constant attachment,

	Context-awareness Balance Satisfaction and simplicity	Being in charge, Personal vs. personality, Balance and trust, Satisfaction and joy
Satisfaction and simplicity	Emotion Cognitive setting Information Mobile Moment experience Positioning Context-awareness	Limitations and capacity, Mapping of characteristics, Simple and concrete, Wow-Moment, Commodity of usability, Excitement,
Habits and common etiquette	Expectations Roles Device location Triggers Cognitive drivers Reflection and awareness	Evolution over time, Codex of mobile work, Being in reach, Natural thing, Subliminal message, Addictions and habits
Balance	Context-awareness Positioning Emotion	Double-edged sword, Awareness and responsibility, Privacy and supportive, Limitation and ethics

Table 4.4: Identified themes, relations and characteristics (Source: Author).

In the following, each of the overarching themes is described in further detail by a representative sample from the study, its linkage to and from others and of course its interpretation and impact on the research taken forward.

Information

> *Information at the right time make his kind of day to day work less complicated.*
> (Interview: Respondent C)

The first derived theme describes the perceived requirement of value and usefulness of a particular set of data. The important difference between data and information has been defined in Section 2.6 and advocates the transformation from unrelated chunks

of data into comprehensive and linked knowledge. Taking this forward, the key to a useful Mobile Moment is the adequateness of its content, supporting the user in their current activity. As noted by push and pull (see finding 4.3.1), a balance in adequate amounts of information at the right time is also an important characteristic of the Mobile Moment itself, especially of the ones pushed to the user.
The fine line between the maximum supportive content and minimum experience of information overflow is one of the major challenges in the acceptance of Mobile Moments. As per the earlier defined Sternberg Paradigm (see Figure 2.7), all sensory input has to be processed by the serial stages of information processing. The cognitive capacity (refer to 2.7) is limited during this process and, if exceeded, the result could be stress and negative attitudes. The respondents refer to this limitation by mentioning the risk of *information overflow*, which confirms the difficulty to use selective attention processes within the sensory buffer (described in Section 2.7.1).
Combined with other factors, such as the emotions associated, this has potential impact on the overall - as well as explicit - perception of Mobile Moments in its intended business value to support whenever, wherever and whatever is currently useful. A balanced approach between amount and value is, therefore, also one key outcome of the study to be further looked at by the overarching theme of balance in Section 4.4.

Stating this, the value of information or content is something driving the acceptance of the concept within mobile strategies. The respondents also refer to the characteristics and drivers of adequateness, as summarised by experiences in finding 4.3.1. The inevitable requirement to support the employee is the availability of resources and data around their job and behaviour. The more data is available about their work-processes, the better analytical engines can identify patterns and standardised processes to suggest their next actions. The importance lies in streamlining and orchestration of available data from different sources, as mentioned by context-awareness (see finding 4.3.4), to let the mobile device know its current location and thematical context.
The Mobile Moment is therefore not only limited to the actual user interaction, but rather needs to provide a network of data to identify the one particular useful piece of information, which is helpful to the user to complete their current mobile business interaction (refer to Section 2.4). As an interesting finding from the context-awareness code, contextual data can also be used to filter and block data. The study reveals, that the mobile support not only has to target the right information to be provided, but rather also minimise those, which are, at least in the moment of interaction, unrelated and unnecessary to the user. By this, the sensory processing within the working memory (see 2.7.2) can be reduced and allows further attention and capacity to more relevant perceptions or interactions.

The study also shows that there is no difference in the definition of information related to conscious or unconscious interactions. Here the study provides an enlightening conflict to the current distinction of consciousness within Section 2.7. The finding 4.3.2 shows the information's value is not defined by the act of requesting it, or perceiving it subliminally. Rather, the style of interaction has an impact on how it is processed via the cognitive stages of sensory perception, as defined in Figure 2.8. For this purpose, the study reveals a tendency to focus on Mobile Moments with informing purposes, which do not require further user interactions. In Sternberg's model, this would omit the last stage of "response organization" (see Figure 2.7), resulting in less cognitive effort required.
This aligns with the respondent's positive experience of business value being generated by informing content, which focuses on the user's awareness of an information, rather than their interaction with it, as described by findings on business value (see 4.3.4).
It even goes a step further, as the respondents propose the most valuable usecase of Mobile Moments to be informative on a conceptual level, providing abstract information and relations rather than detailed descriptions. For this purpose, they suggest visual representations as the right vehicle for effortless and quick perception (see 4.3.1). The psychological background for this has been described by the differences between the phonological and spatial processing flows within the working memory (refer to Section 2.7.2) and supports the respondent's subjective experience.

Expectations

> *It is about optimisation and value, to be at the forefront of upcoming topics.*
> (Interview: Respondent G)

The theme of expectations includes a set of different kinds and views. On the one hand, there is an organisational expectation of Mobile Moments to have a positive impact on workforce performance and business value. On the other hand, the user's expectations of a Mobile Moment and its characteristics to make them actually work. Both of them form the definition of the conceptual model, and as seen in the big picture of codes in Figure 4.3, the expectations are linked and referred to many of the other codes. In other words, the expectations precede requirements to make them work for organisations and employees. As a note, the theme focuses on the organisational and consumer characterisation of Mobile Moments. The similar sounding, but cognition-oriented expectancy drivers are discussed as part of triggers (see Section 4.4).
From an entrepreneurial point of view, Mobile Moments are supposed to optimise and

streamline processes in the mobile workforce as defined in Section 2.5. Respondent A summarises "Labour is expensive, so companies are trying to optimise the way they deploy their resources, their employees use their time, whichever way possible". As this relates to a behaviouristic view within mobile strategies, it also shows the important relation to employee's time as one of the most crucial variables in the workforce. Introduced in Section 2.1, time is a scarce entrepreneurial resource, therefore a primary objective of organisational expectation and value remains the employee's efficient use of their time. As a result, a Mobile Moment needs to take this into account seriously and must aim for optimisation to meet the performance-related expectations. The study's outcome on this, also derived in finding 4.3.2, supports the theory introduced by Garhammer (2002) to fit more activities simultaneously into a given timeframe, which also aligns with an initial motivator of a Mobile Moments described in Section 2.5. The second option proposed there, spending less time on a particular activity, is not explicitly mentioned as an expectation of Mobile Moments. This is due to the expert's experience, that optimising an action is an already well-targeted aspect of mobile strategy and task efficiency models. The potentials from Mobile Moments in this case can therefore be considered rather minimal. However, the parallelisation of multiple activities into a given timeframe offers the valuable opportunity to already consider the employee's next required action within their workflow. This in particular, represents an uncovered potential so far.
As the study shows within the code of "positioning" (see 4.3.4), the practical usecase is supposed to extend the current technological landscape rather than replacing it. Mobile Moments should become their own paradigm and not just "mobilise" the current technology. The technological capabilities in terms of sensors, context services, locations, etc., provide potentials, which could be leveraged into mobile strategies independent of and in addition to conservative paradigms (refer to 2.3). With such new mobile paradigms, also the boundaries and limitations to locations or working hours become blurred. The SMEs already refer to their personal experience, being available almost 24 hours a day, independent of their geographical location. As per the concepts of work-life integration (see Section 2.5), the respondents expect further impact on the social aspect of a mobile workforce, which are tangled from an ethical point of view by "balance"-theme later on (refer to 4.4).

The second perspective mentioned is the one by the user himself. The study supports one of the theoretical assumptions, that at the state-of-the-art, a mobile consumer differs from a mobile employee in terms of subjective experiences (see Section 2.2). The user perspective moves beyond the simple interaction with technology: as mentioned in the consumer's description (refer to 4.3.1), the respondents refer to a personal ex-

perience of Mobile Moments and not only their appearance. In combination with positive attitudes or the wow-effect, they even recall their experiences in this rapidly altering context. But at the same time, they miss similar scenarios within the work-environment. The primary demand and expectation by the respondents is shifting and extending the emotional consumer experience into job-related usecases, confirming the ongoing appliance of the concept of consumerisation of IT (see 2.3). This supports the previously mentioned development of an own paradigm, enhancing the experience of Mobile Moments to become a supportive technology in everyday business as defined by mobile business interaction in Section 2.4.

Triggers

> *I think it is the feeling of being needed or that something important is happening 24/7, which I am not aware of or what I should share with others.*
> (Interview: Respondent F)

The overarching theme of triggers directly derives from the earlier code of the same name (see Section 4.3.1). The study shows great value in understanding the practical impulses for mobile business interactions respectively Mobile Moments. Appreciating the drivers regarding triggers as well as the more specific phantom triggers, offers a broader practice-oriented reflection from actual consumers and strategist compared to the previously discussed foundational and theoretical background from Chapter 2. The study's findings extend or even alter those earlier thoughts in some areas.
Similar to the split in the theme of expectations before, a split between internal, cognition and personality oriented, and external, drivers and social expectancy, triggers is taken forward. This differentiation is also one of the most influential steps in understanding the key drivers of interactions in relation to the characteristics to be addressed for a Mobile Moment, as described by the research questions (see Section 2.12).
First, interpreting the relations from an internal perspective, triggers illustrate mostly bidirectional relations to interaction drivers such as the habits, expectations and cognitive drivers. Checking habits are something which develops over time during the reciprocation between a mobile interaction, the result and the expectancy of follow ups. As respondent D describes "It is kind of restlessness, they are looking for something but they are not sure what.[...] it is turning into a habit". Other mentioned internal drivers for checking habits are curiosity and continuous subliminal attention, as also earlier introduced by the phantom vibrations. Their combination also has its cognitive background in the first step of information processing:

Attention is a paradigm applicable to the sensory buffer, as described in 2.7.1 and by the respondents' idea of restlessness, the user's mind is tuned for interactions, training the attentive comprehension to look for clues in sensory data. Sometimes the attentive comprehension fails and illusive clues are perceived, resulting, for example, in the previously mentioned phantom vibrations. Further highlighting the individuality of attention, habits and curiosity is something learnt over time and is built up from the working memory. The primary activity is to compare existing mental models with incoming sensory data for the purpose of decision making and activity planning (see Section 2.7.2).
Targeting the mental models appropriately can also enrich the process of sensory attention. A well-designed and positioned set of clues can lead the user's attention as part of their Mobile Moment. Building up cognitive relations to existing knowledge and personal expectancy is therefore supposed to drive interactions with a Mobile Moment and to gain value out of it. The importance of this relation is also key in addressing the aha-moment (see Section 1.3), since the newly perceived information can be set into context with existing models to make sense out of it. The respondent's experience shows, the better the fit of information of the Mobile Moment to the mental model, the easier is the perception process and the more likely is the experience of an aha-moment.

The external perspective focuses more on the triggers associated with social expectancy and actual interaction from and with a Mobile Moment. As described in Section 2.8 and 2.9, performance and motivation are primary social drivers in terms of being part of a workforce's business value. As respondent F explains, "Being a support to do my job a bit better" proposes a light but definite relation to a worker's personal job performance, which, as defined in Section 2.8, contributes to organisational effectiveness. This social or organisational request asks for individual's performance optimisation and is mainly driven by setting beneficial goals or a subliminal expectancy, "because I am so important" (Interview: Respondent A).
Motivation distinguishes between the beneficial goals by the Goal-Setting Theory and expectancy described by the VIE-Theory (see Section 2.9). In that case, being "important" is a highly subjective and characterising element, representing the major factor within the first theory, having self-esteem in their job and the abilities to fulfil it. Somewhat more rational is the view on the relation to the VIE-Theory, where a strategic personal decision results in dependencies between several (intermediated) goals, motivating an employee to reach particular milestones by sustaining trust and beliefs in their impact. The combination of both theories, as also described in the earlier definition of motivation, including ability, personal importance and emotion, are also mentioned by the respondents. These form the suggested main motivational cognitive drivers to

be addressed while positioning a Mobile Moment in a mobile workforce strategy. As a note, emotion has been separated into its own theme. It has not been looked at within this section explicitly, although it can also be considered as an important cognitive driver in job performance (see Section 4.4).

One additional and unexpected outcome of the study should also be revealed in terms of the earlier expected differentiation between triggers of conscious and unconscious interactions. Although the initial description of analytical codes suggests a difference between the involved triggers, the study shows commonalities between conscious and unconscious internal drivers in restlessness, curiosity and attention as well as external drivers of importance, ability and emotion. This makes a continuative distinction in the context of Mobile Moments obsolete. In summary, the triggers summarise the practical and appliance-oriented motivators of experiencing Mobile Moments. In contrast, the cognitive drivers (see 2.10.2) describe the characteristics of the moment itself. The aforementioned external and internal triggers are taken into the conceptual model to suggest factors of application and emotional closure of the user.

Emotion

> *I think for the majority of people it gives the warm fuzzy feeling that you are connected to the world, you are part of something bigger and that attachment to the device gives us a lot of options.*
> (Interview: Respondent A)

The aforementioned emotion as an important trigger of mobile interactions goes even further and respondents refer to an emotional bond between users and the mobile device. Respondent B sees the mobile device as "your constant attachment to the world", the makes access and sharing of information possible in every situation. He further elaborates the primary combination of excitement and anxiety in a neologism called "Exciety". Hereby anxiety refers to the earlier mentioned social fear of missing out on something and loosing important knowledge necessary for potential decisions when aiming for personal goals as explained by triggers (refer to Section 4.4).
Excitement brings in the emotional aspect of a positive attitude towards the information itself or the interaction with it. The excitement of having the right information (see 2.6) at the right time or having a personal companion always available for support. It strengthens the personal bond and impacts the experience of Mobile Moments in mobile workforces. Especially the factor of joy of use, is very emotional as described in Section 2.8 and shares the respondents' strategic view that "in the future it is all about better experience, everything becomes more emotional and individual" (Interview: Responded T).

The aim to generate personal experiences and positive support during an activity thereby accommodates a positive relation to better job performance (see Section 2.8). It is also highlighted as an important outcome of the study in terms of overall acceptance and individual motivation. The relation to the introductory concept of aha-moments is eminent (see 1.3): personal relief because of the right information at the right time is supposed to help the user in their current, or upcoming activity. This especially comes into play, if they are surprised with useful information as their personal aha-moment. Relating this to the seven cognitive drivers (see Section 2.10.2), joy of use links to the satisfactory factor of an interaction, whereby the application of others, such as the intended goal or the context of use, enhance the supportive content of the same. The usecase-oriented combination of all elements can create the individual's personal and emotional-driven Mobile Moment. Strongly related to this, the factors of satisfaction and its sub-elements of simplicity and the Wow-effect, are described separately (see Section 4.4).

Understanding the individual's need in certain situations, as supported by the code of context awareness (see 4.3.4), supports the motivational aspect to personally accept Mobile Moments or even rely on them. However, the study also shows some concerns and requirements in terms of trustworthiness. The user's awareness and feeling of being in charge, as respondent H explains: "I have to decide, is it so relevant for me" in terms of business value is something to consider in any scenario. Emotions could quickly switch from a positive to a negative experience, especially if the distinction between business and leisure are not considered appropriately, as mentioned in Section 2.5. A high level of trust is expected in this case, appreciating the support in terms of the current job activity whilst considering privacy in all other areas. This ethical distinction is also discussed within the theme of balance in Section 4.4, but should be mentioned here due to its importance in building up the emotional bond between the user and their mobile device.

Overall the study highlights the appreciation of the emotional bond of the user to their device. Being more personal is one of the important motivators to take forward from here, understanding that personality is something highly individual and depends on the characteristics of each of the users. This underlines the initial theories of cognitive motivation as described in 2.9, but extends the theory by further individuality in terms of cognitive settings, capacities and professional goals among different users.

Satisfaction and simplicity

> *I expect a clear and simple app to do what I have in my mind.*
> (Interview: Respondent H)

While emotion (see 4.4) is concerned about the overall "warm fuzzy feeling that you are connected to the world" (Interview: Respondent A), satisfaction and simplicity are more concrete in terms of Mobile Moments being introduced and accepted within mobile workforces. With the knowledge of cognitive models and capacity, as described in 2.7, the sought-after simplicity is not only a suggestions but also a comprehensive limitation of Mobile Moments. The characteristics of a Mobile Moment are supposed to align with these notions from the cognition theory in order to provide value to the users. In these terms, the set of cognitive drivers, is something to consider in any practice-oriented discussion of Mobile Moment characteristics (see Section 2.10). Although supporting the theory that all characteristics should be considered as drivers, the findings on triggers (see 4.3.1) propose a dynamic valuation of these according to the individual Mobile Moment. The characteristics of drivers might differ and show an alternating focus, when defining the moment and goals. The cognitive model, therefore, mainly provides the abstract model, however, its specific application depends on the usecase. This is also taken into considerations when applying the concept of Mobile Moments into practice, as outlined in the later Section 5.1.4.
In reference to the code of cognitive-setting (see 4.3.1), information should be easily-consumable depending on its intention. The appreciation of visuals instead of texts is already elaborated by the information theme (refer to 4.4), but is also a subjective driver of satisfaction due to its simplicity in perception. Simplicity refers to the aim of perceiving valuable information using minimal cognitive effort and capacity. This can even be abstracted a bit more, with the aim of gaining efficiency in comprehension and generation of business value by means of Mobile Moments. The relation within business value, described by the respondents, goes from less conscious and implicit activities to a better support in their business processes.
Being simple but concrete is a key takeaway for optimising the interaction with business value. The finding on cognitive drivers (see 4.3.4) additionally shows, that a moment's focus on emotion, satisfaction and personal expectation is perceived more important, compared to organisational benefits or goal commitments. This statement partially disrupts the current theories on performance and motivation drivers described in 2.9. Work becomes more than goals and targets, especially if the distinction between job and leisure blurs out (see Section 4.4). Organisational motivation might still be relevant, but especially for the success of Mobile Moments, the personal experience is more likely to have impact on the employee's motivation, respectively their job performance.

Another aspect of satisfaction, in addition to simplicity, is the value of positive attitude. Respondents refer to a "a wow moment, that's what I call a Mobile Moment." (Interview: Respondent D). The experience of something unexpected but helpful, makes a Mobile Moment something positive as per the respondents' argumentation (see Section 4.3.1). This satisfactory feeling is assumed to normalise and become a habit over time, similar to the grown-up experience of astonishment, it might become a commodity. In comparison to the earlier mentioned joy of use, which describes the positive attitude while interacting with a Mobile Moment, the wow-moment is more something that supports the initial integration of such moments into mobile strategies: pushing for interest, excitement and user acceptance. After that, the commodity and paradigms of usability might take over to gain momentum as part of mobile business interactions (refer to Section 2.8).
The technical requirements to create such a wow-moment are dependent on the previously mentioned trustworthiness and acceptance of privacy-tangled information. Context-awareness (see 4.3.4) is, for example, a technical precondition to knowledge of the user's current activity, location or state. With the combination of these data, analytical technical engines are able to determine potential next actions or suggestions, which might provoke a positive emotion of support by its recipient. The code of positioning (see Section 4.3.4) is highlighting this as potential success factors of making Mobile Moments work in mobile workforces. Being aware of the user's next action is one of the most interesting paradigms, as described by multiple respondents, in order to catch the user's attention and strive for excitement and overall satisfaction.

Habits and common etiquette

> *The act of putting it aside might also be an act of showing his interest.*
> (Interview: Respondent B)

The study suggests that particular habits and styles of interacting with mobile devices develop over time. Respondent E describes, "I think there was an etiquette which had to evolve over time" and it goes back to the introductory statement that "mobile technology has had an enormous impact on a lot of aspects of people's lives" (Wajcman, 2008). The external expectations, as outlined in 4.4, of being available independently of the current location or timezone is becoming a codex for a mobile worker. The underpinning habit of always being in reach, at least in terms of important phone calls, is a challenge to work with. The SMEs provide some personal experience on this and assume that it also has something to do with the job role, which they are employed in.

As a strategist or consultant, they see a codex of being available and "in reach virtually as a lot more common than, for example, a field worker who usually works fixed hours", as respondent F mentions. Nevertheless, the relevance remains within consultancy and field-working industries, having the device at the fingertips for any potential immediate need for information, as code "device location" describes in Section 4.3.2.
As per the "roles" (see 4.3.2), interacting with mobile technology during work, and as the study focuses on, during meetings, is a "natural thing to do" (Interview: Respondent A). The habits of continuous interaction, triggered by drivers, as noted in Section 4.4, is a prominent factor in today's business environment. Respondents see cognitive drivers (refer to Section 4.3.4) for such habits in addictions or boredom, noting that these might appear without the subject's awareness or attention (Interview: Notes Respondent E). This refers back to the conscious and unconscious interactions as discussed in Section 2.7.
In addition to the codex and habits, another topic is highlighted within the study. The colleague perspective (see Section 4.3.3) offers some thoughts on the subliminal messages as part of common etiquette, which surprisingly not only focuses on negative emotions. Respondents refer to the positive experience of their colleagues putting aside their device intentionally, to show respect and appreciation to their conversation partner. Nonetheless, in any case, the subliminal message, either creating positive or negative emotions, is a valuable notion within the term of common etiquette. By proposing this, the code of common etiquette has also been considered as a theme to take forward into the conceptual model. In addition, the colleague perspective shows a further appreciation of a raised awareness about mobility and habits on the participants themselves and their perception of others. The impact described also aligns with one subliminal aim of the given research to move the experience of mobile interactions into a conscious activity. By doing this, habits might alter again due to self-reflection and external feedback in future mobile scenarios (see Section 1.7.5).
Overall habits and common etiquette is a highly subjective topic. The experience of certain activities might differ between recipients but, nevertheless, the study suggests that it has an impact on acceptance and integration of mobile technology and Mobile Moments into everyday work.

Balance

> *Because by having a mobile device, you are seen as a mobile employee, so no matter where you are in the world, or what timezones you are in, those boundaries are gone.*
> (Interview: Respondent B)

As a final theme and also a first step into further potential research for ethical considerations, balance forms a reflectional aspect of the other themes mentioned. The code of context-awareness (see Section 4.3.4) explains: It is always a double-edged sword of 24/7 availability. On the one hand there are a lot of potentials to "simplify and add efficiency to the business life but then, it becomes just another way of taking the humanity away" (Interview: Respondent B). However, an adequate balance between the two extremes is something worth considering. The implications for business and leisure are an on-going ethical discussion as mentioned in Section 2.5.
Self-maintenance and especially awareness of this sensitive topic is key to making mobile strategies applicable and Mobile Moments work, as respondents suggest as part of "positioning" (see finding 4.3.4). The user or employee has to be in charge and self-maintained in order to support responsible and ethical implementations, as they continue.
As per the philosophical section on ethics (see 3.8), work-life integration is an ethical topic on its own. Raising the importance of the discussion and suggesting further considerations on an appropriate balance between the user's privacy and supportive benefit is one of the potential extensions to this research. However, the current focus remains on the potential of Mobile Moments within mobile strategy from a technical and performance-oriented point of view, to raise awareness and suggest an applicable conceptual model, rather than discussing it ethically.

4.5 Major outcomes

The outcome of the thematic analysis offers a good overview on the current practical aspects of Mobile Moments. The identified codes and themes illustrate a wide range of influencing characteristics, which also build up a network of relations between them. The initial perspectives (consumer, worker, colleague, strategist) have been replaced by categorising and synergetic themes during analysis and are taken forward into the creation of the targeted conceptual model. The SMEs' experiences also provide useful thoughts on the potential application and usage of Mobile Moments in daily business, which forms one of the conclusive sections on the actual opportunities in mobile strategies and how to address them.

The upcoming section takes the themes and codes under discussion and puts them in relation to the research's aim and objective. Starting with a big picture, the applied abstraction of overarching theme helps to visualise the dependencies towards the earlier cognitive model. The identified themes are used to confront the three defined research questions before concluding the study's outcomes.

4.5.1 Identified conflicts and enhancements

In addition to the key results mentioned in 4.1, there are also a few interesting, unexpected or conflicting findings from the study in relation to the initial theories given in Chapter 2. This section takes these into account and provides a more subjective and interpretive view of the study's outcome. The following Table 4.6 summarises some of the prominent findings and points them to their relevant context and occurrence. This supports the contribution to knowledge as well as the upcoming creation of the conceptual model of Mobile Moments. The *finding* describes the place of initial notion, *summary* gives a short description and *target* links to the overarching theme describing the conflict or enhancement to existing theory and its appliance.

Finding	**Summary**	**Target**
Triggers	Identifiers and drivers of a Mobile Moment can be weighted differently	Satisfaction and simplicity
Conscious interactions	Distinction between conscious and unconscious interactions becomes trivial	Information, Triggers

Business value	Data versus information, definition of adequateness for Mobile Moments	Information
Context-awareness	Context-related data as a filter for currently unrelated information	Information
Cognitive drivers	Focus on emotions, satisfaction and expectation, rather than goal commitments or performance indicators	Satisfaction and simplicity
Expectancy drivers	Confirm the scarcity and pressure of time for business interactions	Expectations
Triggers	Distinction between drivers and triggers for the conceptual model	Triggers
Satisfaction and simplicity	Trust as a requirement for an emotional bond	Emotion
Triggers	Individuality and personal experience as major motivator for interactions	Emotion

Table 4.6: Summary of major enhancements to theory from the findings (Source: Author).

4.5.2 The big picture

As the next major milestone of the given research, Figure 4.3 illustrates the sum of identified codes, themes and relations from the main study's thematic analysis. The big picture builds the bridge from the study's outcomes towards an illustrative conceptual and abstracted model with the aim of supporting comprehension and derivation of its origin. Overarching themes aggregate the findings from interpretive codes and advances them into the final model (refer to 5.1).

The big picture itself does not provide any additional information, rather it visualises the results from Sections 4.3 and 4.4. It illustrates the interpretations of findings and underlines the complex relations between the codes, which have been structured and grouped into the overarching themes. It also outlines the reference and definition of a

theme (later called *integrator*) to be reviewed in combination with the final conceptual model.

Grey-coloured nodes represent initial codes; whites show identified themes; two-coloured nodes are those, which are a code as well as an associated derived theme. The arrows show the directive relations between all of the codes as already proposed by the code descriptions (see Section 4.3). This overview of findings is taken forward into evaluation of the defined research questions (see 4.6) and helps to abstract the identified themes into the conceptual model of Mobile Moments.

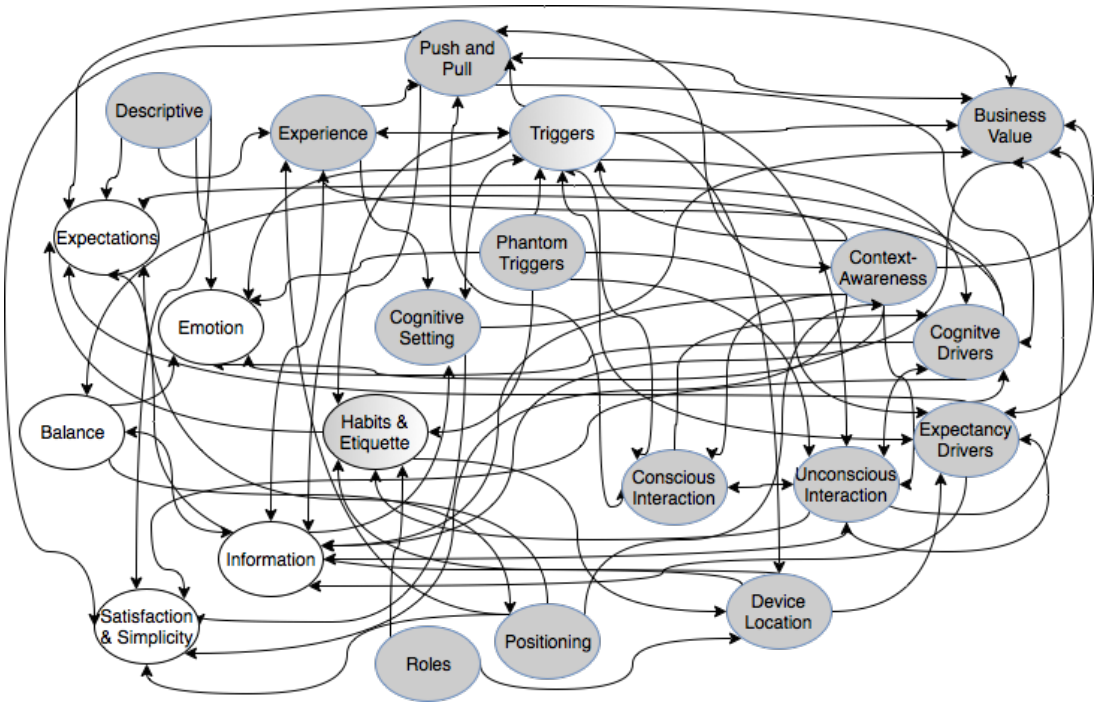

Figure 4.3: Overview of identified codes, themes and relations (Source: Author).

4.6 Model and reflection

With the results of the study in mind, the themes illustrated by the big picture (see Section 4.5.2) can be added to the earlier milestones of mobile business interactions (see Section 2.4) and the cognitive model (see Section 2.11). The study's outcome extends the definition of a Mobile Moment with the integration themes ("integrators"). The integrators form the third kind of characteristics and illustrate triggers of Mobile Moments. In relation to Figure 4.3, these are the representatives of the study's codes and themes. The reference to research questions B and C underlines the terminology of integrators by being the practical appliance of a theoretical concept characterised by cognitive drivers and identified in the context of mobile business interaction.
All of the three types of characteristics (identifier, driver, integrator) can now be put in relation by extending the earlier cognitive model accordingly. The combination hereby forms the next major artefact of the research, providing a linked concept including the context, definition and appliance of Mobile Moments. Aligning with the earlier introduced research process (see Figure 4.1), the concept now provides the major ingredients to become a consultancy model, which will be further polished and generalised in the upcoming chapter. The major intention of the concept, as shown in Figure 4.4, is to provide comprehension about the sources of the provided characteristics. In further reflection, the model illustrates the major findings of the defined research questions (see Section 2.12, which are further elaborated and documented as part of the overall conclusion in Section 5.1.3.

As already introduced in Section 2.11, the keywords on the right hand side illustrate the source and origin of the characteristics within the research. In case of the added integrators, these are defined by the initial perspectives used during the main study (consumer, worker, colleague, strategist). The perspectives provided the analytical guidance during conduction and analysis of the main study, as described in Section 4.3. As a result, Figure 4.4 puts the integrators of Mobile Moments into context and links them to the earlier artefacts of the given research.

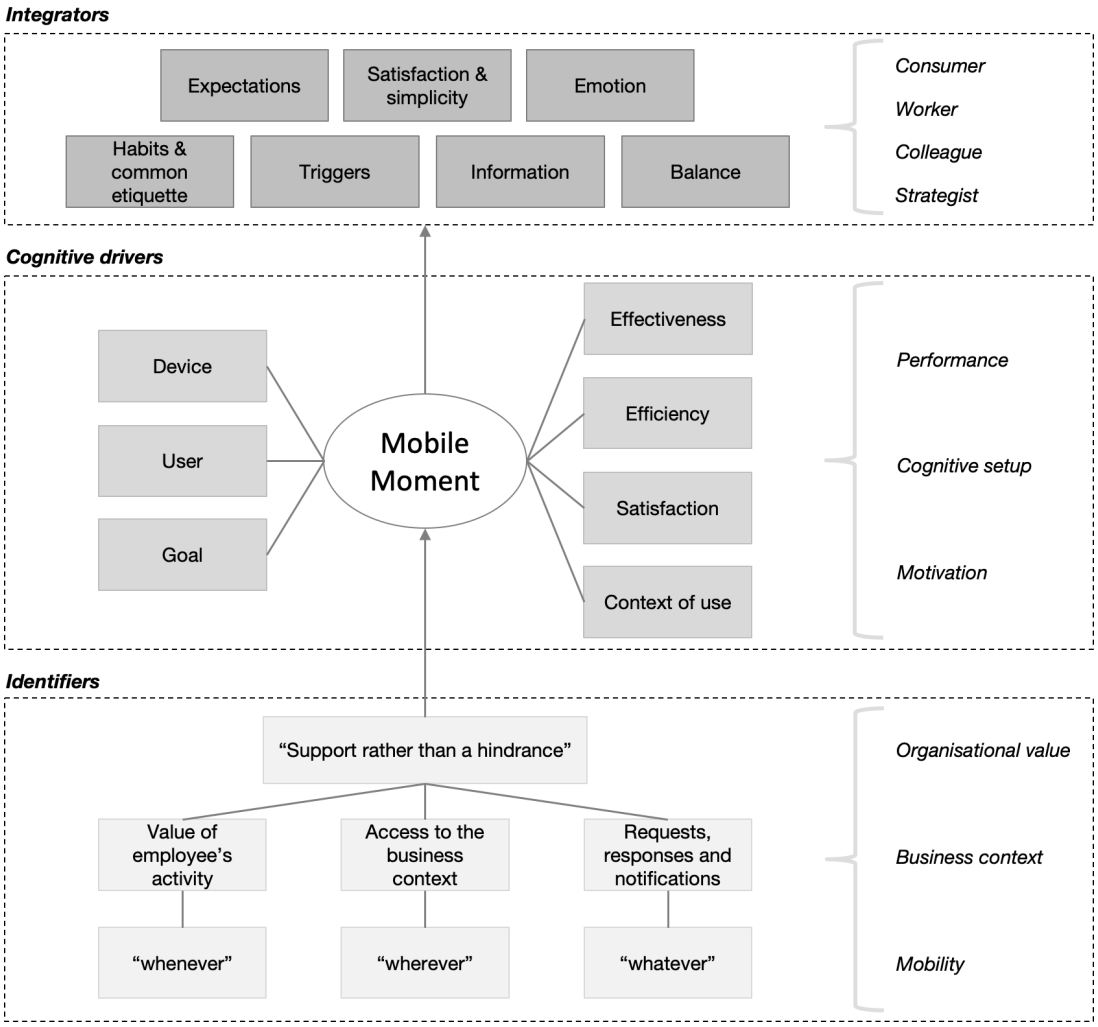

Figure 4.4: The concept: Mobile Moments defined by integrators, drivers and identifiers (Source: Author).

4.7 Justification and sample appliance

In regards to the findings and interpretations of overarching themes in Section 4.4 the following reflection takes a look at the choices made and the outcomes produced. It includes a critical view on the answers to the underpinning research questions as well as summarising the results of the follow-up study, intended and conducted as described in Section 3.7.
One of the most prominent and likely to be discussed topic using interview is the selection of participants in terms of quantity and appropriateness (Kvale and Brinkmann, 2014). Section 3.6.2 introduces the interviewees and their background in relation to the theme of study. Their knowledge, experience and practices underline the SME-expertise, advancing the value of input. The focus on experts in the research area offers valuable insights into the current and potential practice of Mobile Moments. During the data analysis, findings showed tendencies and relations among the participants proposing important themes in the discussions as shown in Figure 4.4. As per the related argumentation, these themes enhance the cognitive model by practical relevance and towards a better common understanding, which reflects the primary aim of the study. Stating this, the value of insights, given by the sum of participants, is stated as sufficient and adequate in relation to the research's aim. Additionally, this is supported by the results of the follow-up study, which elaborates on a suggested fit of the developed model within IBM's mobile strategy. It discussed a potential usecase for the model and its general comprehension as part of mobile consultancy.

In the follow-up study, results of the main study have been summarised and prepared to provide a compressed view on the conceptual model and to be taken into relation and integration with an actively-applied mobile strategy. In order to collect expert feedback on the model derived, IBM's MobileFirst and Digital Reinvention strategies (IBM Corporation, 2018d,c) are used as an example to integrate the conceptual model into current consultancy practice. These strategies have been introduced in Section 2.3.

The follow-up study discusses the opportunities and illustrates related integration points by the feedback of acknowledged subject matter experts (see Section 3.6.2). The feedback outlines the practical relation and appropriateness as part of the IBM's strategy and it also outlines current gaps, which the newly developed model targets to fill. The findings and discussions of the follow-up study support the overall model and justification of the research approach used. As the main result, it appreciates the value of Mobile Moments in addition to the existing concepts within IBM's mobile strategy. The extensions of current supportive mobile technologies into new usecases, in which

the today's strategy is not able to identify potential opportunities. In the concrete example of IBM, the existing focus on "pain points", which are conscious challenges for a potential user to do their job appropriately, is extended by Mobile Moments as the concept for the user's (unconscious) next-to-be-supported action. In addition, the results suggest considering a level of flexibility in the conceptual model in order to support variability in the cognitive factors and the integration themes: some of these might become more important than others, based on the actual usecase or, respectively, the Mobile Moment identified. Taking this small enhancement to the final conceptual model, the respondents understand, appreciate and support the benefits of the derived model, as, for example, Respondent J summarises (Note: Results of the follow-up study can be found in the Appendix D):

> *In general, yes I can comprehend the approach behind that and it extends the existing Design Thinking, which I think, is a cool enhancement to be taken forward.*

The overall process of the main as well as the follow-up study, refers back to the philosophical framework and its underpinning constructivistic standpoint (see 3.1). It aligns with the concept of qualitative research striving for extended understanding and comprehension of relations as defined in Chapter 3. The main study develops a model from theory and practice, whereby the follow-up study underpins its value and justifies its appropriateness. The actual findings and outcomes of the study find comprehensive responses to the defined research questions from Section 2.12. The answer to Q. B (see 5.1.3), especially, summarises a set of key drivers in mobile interactions, whereas integration themes describe the practical evaluation and appliance of them while extending the list of cognitive characteristics (see 5.1.3). The combination of both represents the outcome and fulfilled aim of the research which will be summarised and visualised in the upcoming chapter.

Part V

Conclusion

5 Summary and conclusion

The given chapter provides the primary outcome of the research in terms of the conceptual model of Mobile Moments. It relates back to the overall aim and objective and illustrates the contributions to knowledge and practice. The study's results are summarised as part of the model and are valued against their potential appliance as well as their limitations. The final section also reflects on the analogies and roots of the research's intention and motivation, concluding the given thesis with an outlook towards potential extensions of the research topic. In terms of the research process, this final chapter illustrates the consecutive outcome of the research in addition to an exemplary application of the results, as shown in Figure 5.1.

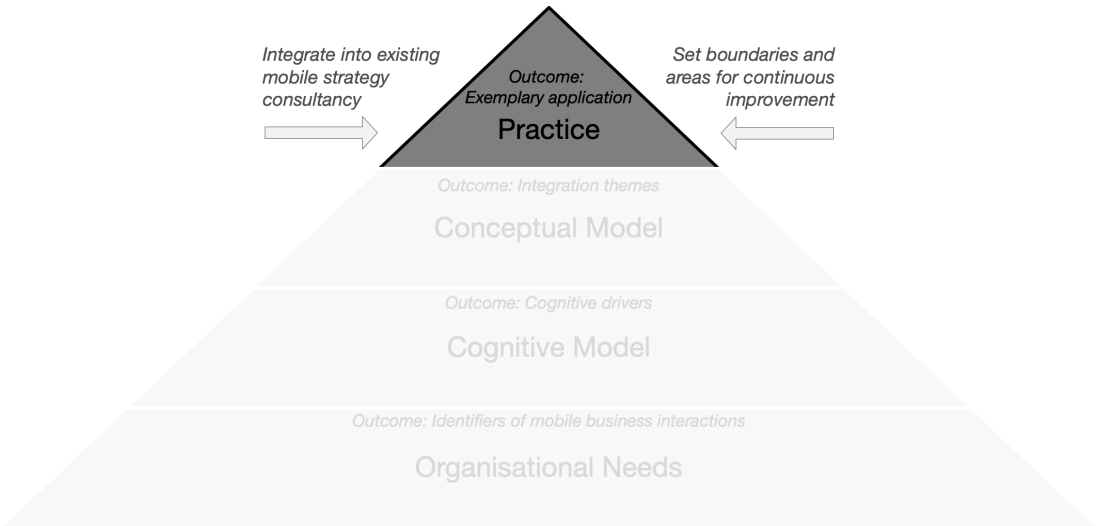

Figure 5.1: The underpinning research process: Practice (Source: Author).

5.1 Conceptual model of Mobile Moments

Before providing an outlook on the application of the result, it is worth pointing out that the conceptual model of Mobile Moments is the illustrative outcome of the given research. It combines all earlier milestones and results in a comprehensive summary of the research process introduced in Section 1.6. As described by the purpose of a Mobile Moment in Section 1.4, the final model provides insights and suggestions into mobile strategy as an inclusive and linked system of cognitive, entrepreneurial and technological drivers. The following sections elaborate on this expectation and link back to earlier milestones and their reference within the research process. The result differs between the research's framework and the conceptual model. By definition, the framework describes the process and development of the research's outcome, whereas the model characterises and represents the actual result (Anfara Jr and Mertz, 2014, Lewis, 2015).

5.1.1 Underpinning framework

The research process builds up a four-stage approach into the research context. In this way, organisational needs form the foundation and indicators of the study. The next stage aims for understanding the cognitive factors as well as the relations towards individual performance. This stage has been introduced as the cognitive model. Based on the understanding of the theoretical model, mobile strategy and practical experience has been analysed to enrich the model and to offer comprehension by major themes within a conceptual model: The third stage. The final and upcoming stage is defined as practice, leveraging mobile workforce performance by applying the conceptual model exemplarily. Continuing the earlier definition of the research process, the following Figure 5.2 illustrates, summarises and confirms the four stages in terms of the developed research framework of Mobile Moments.

In each of the stages, the research provides an explicit artefact (=outcome) to support the overall comprehensibility as defined in Section 1.7.1.

The primary aim and intention of the given research is to outline the underpinning facilitators and drivers of mobile business interactions and their relations in terms of the concept of Mobile Moments. This includes the ancillary aim to better understand the related human cognitive characteristics in order to leverage workforce performance by enhancing mobile strategy consultancy and practice.

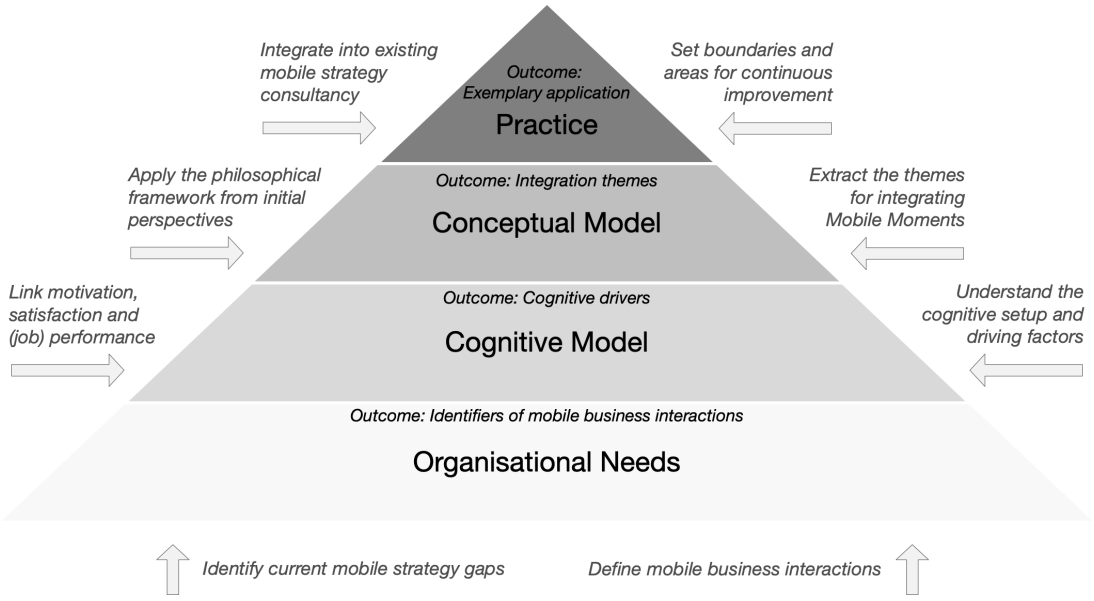

Figure 5.2: The research framework for Mobile Moments (Source: Author).

The artefacts for each of the four stages are also the building blocks of the conceptual model:

Model of supportive mobile business interactions is characterised by the definitions, models and theories targeting mobile business interactions. Section 2.4 introduced the initial terminology of being a *support rather than a hindrance* within mobile business, which pushed the motivation to further understand the human cognitive factors. It also includes the importance of flow and expectancy in terms of the next best action for a particular activity. In addition, Section 2.5 has highlighted the contextual facilitators of *whenever, wherever and whatever* within the disciplines of Mobile Moments in order to characterise a mobile business interaction as fundamental part of the research (see Fig. 2.5).

As one of the study's outcomes there is a change in the terminology. In the earlier model of mobile business interaction, there are three major characteristics: (1) Value of employee's activity (whenever), (2) Access to the business context (wherever) and (3) Requests, responses and notification (whatever). The study also provides more practical input on the latter one, highlighting the value of those requests, responses and notifications. It also shows that the definition of business value itself is driving the "whatever-useful" aspect instead of their actual distinction as their kind of information (see Section 4.4). Therefore in the upcoming model, this particular facilitator is renamed to *value of content*.

The **cognitive drivers** have been identified by the facilitators of Mobile Moments as a cognitive model developed in Section 2.11. It not only includes the derived cognitive drivers, it also connects to the earlier model of mobile business interactions. This includes a wide set of concepts being connected (see Section 2.10). Throughout the various thematic areas, it is bridging the gap of missing cognitive factors and drivers within today's mobile business. The actual cognitive model is illustrated in Figure 2.10 and precedes the research questions described in Section 2.12.
As introduced in Section 2.9 and identified as an important differentiator in relation to the expected impact on job performance, cognitive characteristics describe the model's enablement via various motivators of Mobile Moments. The facilitators propose the cognitive ability (capacity to perform) to create a Mobile Moment. In contrast, the next stage, described by the integration themes, provides the characteristics to motivate the individual to apply the Mobile Moment. It suggests the aspects to be targeted in order to increase the employee's willingness to perform and to use their supportive technology.

Integration themes describe the overarching themes raised from the study's findings and related codings. Their derivation is based on the thematic analysis and the big picture of practice-oriented Mobile Moments (see Fig. 4.3). The outcome describes a set of influencing characteristics and network of relations, extending the already defined cognitive model shown in Figure 4.4. The themes in Section 4.4 consider practical experience in order to fill the gap of integrating Mobile Moments in mobile strategies. As shown in Table 4.4, the themes also provide a grouping and relating aspect, including the descriptive and interpretive codes as part of their own definitions.
Highlighted by the follow-up study used for applying the model, each of them might have different characteristics based on the Mobile Moment looked at (see Section 4.7). This can vary between the fact of either not-being applicable at all, a definite (multi-) value or also a concrete similarity to another theme.

Combining the three aforementioned artefacts, the **sample application** provides insights into a practical integration of the results. The usage of the term integration has been considered as a further outcome of the follow-up study and represents the intention to apply (integrate) the model to existing strategy consultancy instead of replacing them. The integration themes also iterate and reflect against the earlier definitions of adaptive and individual performance (see 2.1), which are considered as part of the upcoming model.

5.1.2 Contribution of research

In order to outline the research's contribution to knowledge and practice, this section reflects on the intentions defined in Section 1.7.5. For practice, the research has identified the current gaps in mobile strategy consultancy due to the lack of awareness and missing of comprehensive concepts. With the aim to fill these gaps, the given dissertation links the organisational value of performance and motivation to sustain a business-oriented integration of the derived model. It provides a comprehensive conceptual model and guides its integration in mobile strategy consultancy through an exemplary application. The underpinning framework, as visualised in Figure 5.2, provides the necessary comprehension and anchors to initiate discussions with the thought-leading audience in practice, as introduced in Section 1.2.

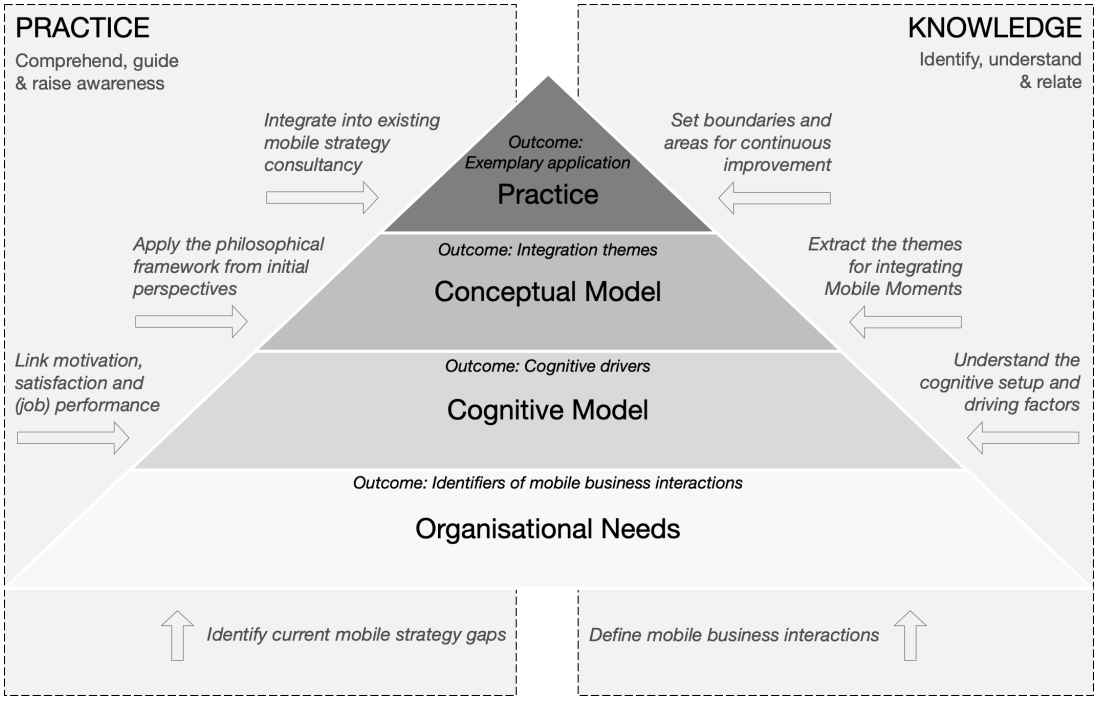

Figure 5.3: The research framework: contribution to theory and practice (Source: Author).

In terms of the contribution to knowledge, the research developed a concept based on identifiers, drivers and integrators of Mobile Moments (see Fig. 4.4). It identifies the characteristics of mobile business interactions and relates them to the cognitive characteristics involved. The understanding and advancement of major models of the human cognition advances the relevance for a supportive mobile technology as developed by

the seven drivers and the associated cognitive model (see Fig. 2.10). In addition, awareness about the limitations of the upcoming final further abstracted conceptual model extends the body of knowledge in terms of its potentials for contextual transfers. Based on the research framework illustrated in Section 5.1.1, the Figure 5.3 summarises the achieved contribution to practice and knowledge. On the one hand, it provides the theoretical value by comprehensive and gap-filling models and their developed linkage between identifiers, drivers and integrators throughout their origin within the different research areas (refer to 2). On the other hand, consultancy and workforce practice does benefit from the option to share deeper understanding about human cognition as well as the guidance to target them via the integration themes, which will be further outlined in Section 5.1.4.

5.1.3 Conceptual model

The aforementioned framework summarises the various milestones achieved as part of the given research and provides the context for the conceptual model (see Fig. 5.2). The model itself combines the various inputs from theory and practice and concludes with a comprehensive illustration of the applicable research results. It is sustained by the framework and its references to the various stages, as well as the underpinning philosophy. The model's structure builds on top of the framework and strengthens the four stages by the actual outcomes of the given study. Characteristics of mobile business interactions, defined and understood by the cognitive drivers, are applied using the integration themes in order to enhance mobile strategy consultancy.
Narrowing this down into the lifecycle of Mobile Moments, the main guidance on the route of this research is labelled as *define, apply and take advantage of Mobile Moments within mobile business*. Figure 5.4 illustrates the final conceptual model of Mobile Moments and reflects against the research's intention and objectives.

In reference to the definition of a model, as provided in Section 1.1, it fulfils the following four dimensions:
(1) It targets the *purpose* of understanding Mobile Moments and the cognitive characteristics involved; (2) the model *maps to an origin* defined by the framework combining technology, business and psychology for mobile interactions; (3) it uses comprehensive and contextual *languages as a carrier*; and (4) it *provides a value* in terms of its application in existing mobile strategies as well as its overall raised awareness about mobile business interactions.

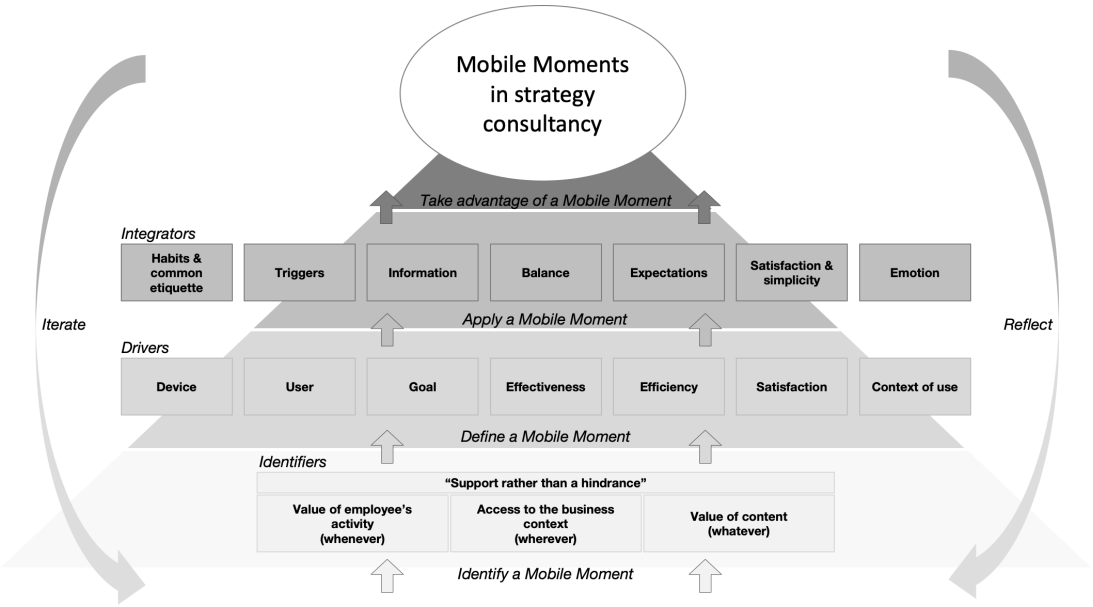

Figure 5.4: The conceptual model of Mobile Moments (Source: Author).

Aligned with the initially introduced research process (Section 1.6) as well as the derived framework (Section 5.1.1), the stages of the conceptual model represent the outcome, but also the summary of the given research. The identification of organisational needs, by investigating motivators (Section 1.3) within the business context (Section 2.1), initiated the review of existing literature towards a cognitive model (Section 2.11) and potential gaps in theory. With clarity on the philosophical standpoint (Section 3.1), the study has extended the knowledge with valuable insights from practice (Section 4.6). The research's artefacts and their intended usage are leading the strong contribution to mobile consultancy (Section 5.1.2) in terms of their integration into existing strategies. Also in reflection to the research objectives defined in Section 1.7.2, a specific mapping of each of them to the conceptual model is provided as follows:

1. *Understand the existing concepts of mobile business interactions and their relations to workforce performance*

   This aligns with the background according to the employee's activity, access to the business context and the business value derived from mobile interactions. The idea of defining whenever, wherever and whatever as major concepts for mobile business interactions provides a comprehensive definition as well as guidance of how to identify performance-enhancing Mobile Moments.

2. *Identify, define and combine major organisational and cognitive facilitators of Mobile Moments*

The facilitators of Mobile Moments are described by the cognitive drivers. It connects the input from the three major research areas of technology, business and psychology and scopes them into a newly derived cognitive model, which defines a Mobile Moment.

3. *Develop a comprehensive conceptual model of Mobile Moments for mobile strategy consultancy*

   Targeting and answering the theory-based research questions built up the comprehensive guide through the research process resulting in the conceptual framework which underpins the final model. Comprehension by illustrative research stages supports not only the given research but also provides a communication guideline with strategy experts in terms of the model's appliance and contribution.

4. *Outline how the developed conceptual model influences future mobile strategies*

   Integrating Mobile Moments into IBM's Digital Reinvention Strategy provides experiences and thoughts about the value of the conceptual model in current practice. With reflections about the use of the model as part of the author's work in mobile consultancy, the research makes the influence on practice explicit. Section 5.1.4 further elaborates on how the model has been applied and gives first evaluations from the experiences. The section will also provide more generic thoughts about the model's appliance and the business contexts to be targeted by identifiers, drivers and integrators.

Although the research aim and objectives framed the approach and indicators for the study, the findings and outcomes provide some additional insights. The relation between business, technology and psychology has firmed up the lifecycle of a Mobile Moment into definition, appliance and advantage. It fills the identified gaps of missing cognitive factors in current mobile business and their appliance as part of mobile consultancy (refer to Section 2.4). In addition, the actual identification of themes, raised from the thematic analysis, propose the awareness and integration into mobile strategy as requested and answered by the list of research questions. The research has discussed and answered the questions of how Mobile Moments impact the performance of mobile workforces, how cognitive drivers of interactions are involved in the concept and how these can be addressed in order to make them work in mobile business.

In addition to the overall research objectives, the study's results can be put into relation to the earlier defined research questions (see Section 2.12). By this, the interdependency between the cognitive model and practical relevance becomes more eminent and sustains the developed conceptual model. The reflectional aspect also shows the difference between the theoretical assumptions documented and the findings about Mobile Moments in practice. As the research questions mostly have driven the main study, the results can be best interpreted in combination with the findings, outcomes and highlights in Chapter 4. The following reflection summarises the results and puts them into context against each of the questions.

> In reference to *[Q. A] How does the concept of Mobile Moments impact the mobile workforce by focusing on the individual's job performance?*

In Section 2.8, the research proposes, that motivation is the key driver for an individual's performance at work. Taking this into relation with the practical insights, all mentioned satisfaction and emotional drivers are expected to have an impact on the employee's motivation and, therefore, also their job performance. By understanding the underpinning characteristics of Mobile Moments, consumer experience during off-time forms the expectations in the business-context. As the big picture illustrates, a lot of factors, described by the themes and codes, have a directive relationship to business value and are seen as potential positive drivers of better job performance.
The research also shows that especially the right information and an appropriate balance of quantity form the requirements for moving towards a Mobile Moment, to become an employee's "support rather than a hindrance" (Vartiainen, 2006, p. 6). It also reveals the immediate impact of extending mobile interactions, whereby it shows the potential impact on the perceived work-life integration and blurred boundaries between work and leisure. This reveals the strategist's personal dilemma: Advocating the integration of seamless mobile business interaction whenever, wherever and whatever useful for business while admitting the user's privacy and the personal expectation of always being in charge at the same time.
With mobile technology in place, aligning with the ideas such as context-awareness, a lot more data about the context of use can be derived automatically. On one hand increasing the creation of situative content and information, but on the other hand allowing further organisational supervision. The study proposes, that this is the "double-edged sword" (Interview: Respondent B), which the strategist's need to wield, when providing details on its practical benefits same wise as ethical considerations during mobile strategy consultancy. The individual's job performance is, therefore, impacted by Mobile Moments in various ways.

With mobile technology moving from consumer to the business context, expectancies on usability are built up, a common etiquette is becoming more and more relevant and business interactions are striving for shorter response times. All of these are combined in the characteristics of a Mobile Moment, which as the study suggests, becomes an additional channel for generating business value out of situative mobile interactions established by the advanced knowledge of the user's next need.

> In reference to *[Q. B] How are key drivers in conscious and unconscious interactions involved in mobile work environments?*

In relation to the given research question, the analysis of practical experience shows the similarities between unconscious and conscious interactions from a cognitive-driver oriented perspective. As one of the major findings, both of them share their dependencies on triggers, cognitive settings and expectancy drivers. In terms of the definition of information, especially, the value of the interaction is supposed to not be defined by the act of requesting it consciously or perceiving it subliminally. For both cases, the study shows, that one of the primary drivers for mobile interactions are simple and informative content, which, by the definition of cognitive setting, is supposed to generate business value.
The theme of triggers within the big picture and its relations shows the core aspects of mobile interactions. Drivers are discussed in a broad range between cognitive and personality-oriented internal triggers in relation to social and external expectancies. The study's milestone, as per this differentiation, illustrates the consumer's personal experience from habits and the concept of restlessness in contrast to the external perception of being part of a workforce's business value and performance.
Key drivers for interactions in mobile work environments are therefore described by the study as a combination of individual's attention, curiosity and restlessness as well as their perceived organisational expectancy of an individual's importance and "being in reach" (Interview: Respondent F) at any time. Another more personal aspect comes into play from a consumer perspective, where the emotional bond between a user and their device aims for a continuative support from the pocket. The device always at the fingertips is something to take into account, understanding the value of satisfaction and the wow-element driving the creation of habits for further interactions, independent of the user's conscious or unconscious awareness of it. The paradigms of phantom vibrations and the study's illustrations of boredom further describe these habits and should not be missed out as a key driver for interactions with mobile technology in work environments.

As the study's main result, the key triggers for interactions in mobile work environments have been identified by the integration themes (see 4.4). They drive the integration of Mobile Moments into practice and illustrate the core characteristics to trigger conscious and unconscious interactions in mobile work:

> (habits & common etiquette, triggers, information, balance, expectations, satisfaction & simplicity, emotion)

These are also strongly related to the cognitive drivers of Mobile Moments, as also discussed as part of Q. C. Because cognitive drivers define a Mobile Moment for a specific usecase, while the integrators describe the characteristics to be targeted for a valuable application of the same. It becomes clear that the answers to both research questions (Q. B and Q. C) are comprehensively linked and form the major practice-relevant outcome of this research.

> In reference to *[Q. C] How to address the key cognitive characteristics of Mobile Moments to make them work in mobile business?*

In comparison to the other two research questions, the requested cognitive characteristics primarily focus on the internal and psychological models to be addressed. For this purpose, the cognitive model has been set up in Section 2.11, with the aim of defining "to-be-looked-at" requirements of being a support rather than a hindrance to the employee. The seven cognitive drivers have also been used as the entry point into the study and conducted interviews. Interview questions, especially from the consumer and worker perspective, have been designed using this cognitive model to be further looked at. With regards to the study's findings, the characteristics proposed to be admitted in the upcoming conceptual model as a statement of the current state-of-knowledge (see 2.10).
Key cognitive characteristics are defined by the drivers of Mobile Moments:

> (device, users, goals, effectiveness, efficiency, satisfaction, context of use)

In combination with the strategy-oriented themes, those characteristics provide more detailed suggestions for designing actual Mobile Moments in practice. They are suggested to be taken into account while creating business-oriented content and applying them to actual usecases. The developed conceptual model of Mobile Moments, including the underpinning framework (see 5.1), describes the actual path of appliance. From a consultant's perspective, the identifiers, drivers and integrators form a step-by-step approach to investigate an enduser's or client's expectation in using mobility in business. Firstly to identify the needs, which in some cases they might not even be aware of.

Secondly, the human cognitive setting driving the need and thirdly, the concretised integrators (triggers) to be targeted by the Mobile Moment to fulfil the current needs appropriately. Further thoughts on the appliance of the model are described in the upcoming Section 5.1.4, which also outlines the potential usage and explicit implications for practice.

5.1.4 Thoughts on appliance

The developed conceptual model describes the characteristics and applications of Mobile Moments in the first place. In order to take advantage of them as part of mobile strategy and to leverage mobile workforce performance in practice, the following section illustrates some thoughts, initiators and experiences about the model's contribution to practice and profession. For the purpose of consistency, the four introduced stages of the model guide the integration process (refer to 5.1.1).

The definition of mobile business interactions provides an understanding of Mobile Moments and their context. This will (1) raise common awareness on the topic and (2) provide guidance into the target area of the model. Referring to the implications and audience in Section 1.2, the targeted audience of the model itself comprises consultants, strategists and innovators. It is key to get these key players on board to move the discovered theory into actual practice. Therefore the comprehension of holistic indicators and descriptions are very important since they represent the fundamental layer of the model.
Making mobile business interactions concrete, in terms of the aforementioned concepts about whenever, wherever and whatever, brings in the overall idea, which is to consider mobile as a strategy on its own compared to traditional static work environments. Giving examples, such as doing small business-interactions on the way to work, for example on the train or bus, is presumed to raise organisational interest. The consecutive aim to better support the employee during their daily tasks opens up another usecase immediately: context-awareness, as described in Section 4.3.4, which is not a new topic on its own, but in combination with the cognitive aspects and characteristics of Mobile Moments, it becomes more practical. It considers the business impact in terms of knowing the employee's next action in their personal business process.
Identification of a valuable mobile business interaction is the most fundamental objective for integrating the model. It requires the coaching expertise of strategist and method coaches (e.g. Design Thinking) to work with the users of mobile technology directly. The mindshift to be targeted -and coached- is moving away from focusing only on the current and eminent problem (or pain point), to a more holistic view.
The upcoming activities to be supported in a way the users have not considered before.

The endeavour for aha-moments and the feeling of flow, as introduced in Section 1.3, has to become a priority during the strategic process of identifying mobile opportunities in the employee's workflows. Mobile Moments are challenging this endeavour, by continuously questioning mobile technology to be a support rather than a hindrance in the current as well as the next employee's action.
Defining actual "support" implies the understanding of the employee's needs and expectations for their job-related activities. This, as the second but iterative stage, involves the cognitive drivers identified in Section 2.11. They define the influential human factors of a Mobile Moment in personality and mindset. The stage combines in-depth user research towards the seven major drivers. Understanding the employee's cognitive needs is required to design the Mobile Moment in accordance to the identified mobile business interaction. References to commonly used approaches and methods, such as enterprise design thinking (Grots and Pratschke, 2009), ergonomics of human-system interaction design (ENISO, 2006) or other user-centred design processes (Abras et al., 2004), are suggested to be enriched by the cognitive model of Mobile Moments in practice.

The third layer, defined by the integration themes, provides the next set of factors to be considered, making the Mobile Moment work in practice. On the one hand, for the employee, because personal attributes are appreciated, such as their emotional bond to the device or their individual preferences. But also on the other hand for the organisation, since it will gain value out of the optimised business activities. This immediately strengthens the performance-oriented goal of a Mobile Moment to fit multiple business activities into a given timeframe simultaneously. The emotional benefits are hard to grasp, but the proven linkage between a user's motivation and performance sustains this approach and drives the organisational advantage.

The (strategy) consultant's point of view about the developed model is the focus on advising and coaching the practice within the mentioned progress of identifying and targeting mobile opportunities. Using the knowledge of the model, the consultant drives the discussions about pain points and Mobile Moments from an abstract level towards the actual employee's needs. Understanding the user's workflow and reflecting it against the model's stages iteratively forms not only "the", but "their", Mobile Moment. Allowing the user to create business value as per their personal expectations and motivations.

In a concrete example, the model has already been implemented into a real strategy approach, as the follow-up study describes. It shows a potential anchor for integration and pinpoints the current gaps which are filled using the conceptual model of Mobile Moments, as described in Section 4.7. It also underlines the practical impact of the

given research and suggests further consecutive studies during its appliance in the field. As one concrete example, the follow-up study uses the scenario of a mobile field worker in the area of energy and network maintenance (Syafar et al., 2018), who has to to do a security check before working on an electricity station. The model has been applied in a simplified way to show potential values of the identified factors in each of the stages. These could be derived from methods, such as user-workshops, shadowing or observations within the user-centred design approach (Still and Crane, 2017). For the sake of comparison, an additional interpretation has been added which describes a potential meeting scenario in the common work of a business consultant (Czerniawska and Toppin, 2010).

Layer	**Field Worker**	**Business Consultant**
Identify	After arrival at a business location, the user has to do a security check on the asset before starting to work on it	The next important meeting starts immediately after the current one
Define	Device: Mobile Tablet User: Intermittent user Goal: Complete security check Effectiveness: Correctness Efficiency: Fast completion Satisfaction: Ease in use Context of use: Outdoors	Device: Smartphone User: Experienced mobile user Goal: Prepare for next topic Effectiveness: Key information Efficiency: Perceive without focus Satisfaction: Almost unconscious Context of use: During another meeting
Apply	Habits: Considering time on the road and repetition Triggers: Arrival at location Information: Required data for security check Balance: Input only for maintaining responsibility Expectation: Pre-populated and suggested input Satisfaction: Less repetition Emotion: Appreciate their personal companion	Habits: Check at the end of current meeting Triggers: Time and interest Information: Adequate information Balance: No input required Expectation: Does not interfere the current meeting Satisfaction: Aha-moment Emotion: Appreciate their personal companion

Benefit	User does not need to spend time on preparation (=increased speed of workflow)	User is well prepared for the next meeting (=brings in more value)

Table 5.2: Sample appliance of the model (*Note:* From Appendix B).

As seen in the example, the model can be applied to significantly different scenarios, although the characteristics are highly dependent on the identified mobile business interaction. In addition, Table 5.2 shows a limited (author's) interpretation of the layers, since each of them can be derived with different methods and in different levels of detail. This underlines the argumentation, that the value of the derived conceptual model lies in the awareness and guidance of appliance, however the choice of tools remains untouched.
In the example of Design Thinking workshops, user journeys might be helpful to identify the mobile business interaction, while methods about the persona provide details on the employee's cognitive perspective. User stories and acceptance criteria could provide the conceptual perspective and suggest the parameters of integration. The model of Mobile Moments enhances these methods or tools with explicit guidance and (iterative) linkage in terms of structured layers. And as one of the most important differences to the earlier mentioned pain points (by IBM), the new model doesn't require the user's awareness about their to-be-supported interaction up front.

The follow-up study already provides details on the integration Mobile Moments into IBM's Digital Reinvention Strategy. In addition to this theoretical study, the author has had the opportunity to take advantage of the developed model in their profession and daily work. Based on Enterprise Design Thinking by IBM, they used the terminology and definitions of Mobile Moments to enrich the discussions about new mobile opportunities with actual clients.
For example, questioning the whenever, wherever and whatever during the initial stages of a Design Thinking Workshop, helped to speed up the usual explanation of the user research process, which has to take place in the beginning of each first workshop with actual users, who are usually not aware about user-centric methodology. By this, the author perceived a positive setting and understanding by the users while appreciating their terminology and expectations. The terminology of Mobile Moments even became part of the discussions.

Even further, the drivers of Mobile Moments helped the users to articulate their needs in terms of their individual perception of usecases, which potentially could be supported by mobile technology. Using the guidance of the seven identified drivers led the conversation with the users into a more outcome-oriented discussion instead of former unstructured questioning by the consultants. Obviously, the expectations on the consultants remains, to not limit the user's though processes by enforcing the drivers, but support them during categorisation and identification of areas they have not always in mind.
Applying this to the identification of pain points, enriched the user's awareness about the situation and context, which motivated them to further think about the related triggers. For example, a commonly self-reflecting question was asked, questioning what exactly initiates their work in several situations. Hereby the initiators and drivers of Mobile Moments helped the user to articulate the situation, whereby the integrators made them think about the reasons and potential benefits of a technology-supported interaction. Although the model of Mobile Moments has not been comprehensively introduced as part of these workshops, the influence and impact on structuring and awareness were positively recognised by the users and as well as the colleagues.
Documenting the outcomes of these workshops brought up similar terminology and meaningful categorisation, which were used continuously during the further project activities targeting the identified mobile opportunities successfully. It should be mentioned that these experiences represent a subjective perception of the model's appliance within the author's profession. But it nevertheless provides a first reflective view on the valuable contribution to practice, which could be further evaluated by additional research, as proposed in the upcoming Section 5.2.

5.2 Limitations and further work

Coming to a closure of the given study, the research, as well as the outcomes, reach some boundaries and potential extensions. In earlier sections, as mentioned by the research boundaries (see Section 1.7.4), several interesting areas have been noted and might be worth taking a closer look at.
Right in the beginning of building the theoretical foundation in Chapter 2, the distinction between the enormous context of mobile technology and the term of individual's mobility for business interaction is one of the research's main limitations as well as one of its differentiators. Without putting too much focus on the current state of technology and today's available devices, the research can go beyond technological boundaries and abstract the concept of mobile business interactions into a more generic model. Although this is a known limitation, Section 5.1.4 proposes a potential thought of the

model's appliance to current workforce's practice. This includes established or newly introduced devices and technologies such as smartphones, wearables, tablets, sensors, augmentation, virtualisation, artificial intelligence or potential combinations as part of the previously mentioned post-app era (see 1.1 or Marshall (2017)). All of them, but even more importantly, also upcoming technologies, can be taken into consideration when applying and potentially extending the developed conceptual model of Mobile Moments.

The targeted audience for the research includes, especially, employees in consultancy or field-working companies, as described in Section 1.2. However, this implication has not been set by initial intention, it has, rather, emerged from the research questions, findings and descriptive coding. It became clear that in order to apply the gained knowledge to practice, a minimised context of use is helpful to start with.

Strategy consultancy has been part of the intended route all along and provides the option to integrate a model into a mobile strategy, which can be presented and discussed with potential clients. During this approach, the conceptual model can become more specific to the client's environment and aims to leverage their particular organisational performance. Although Section 5.1.4 offers an example in energy and utility field service and business consultancy, the research stops at the edge of strategical advice, while being open to further extensions and research on the actual end-users. The qualitative research approach suggests the model to be applied into practice, however, a measurable effect on the individual's or workforce's performance in combination with its business value should be analysed as part of a concrete usecase separately, since it might differ in several scenarios. The conceptual model offers the understanding and the qualitative theory for this purpose, but an empirical analysis is a potential follow-up study.

This has also been reflected during the study's characteristics and sample selection (see Section 3.6.2). The study focuses on strategical and consultancy input rather than end-user field data collections. Nevertheless, especially the psychological secondary data, identified and used for developing the main research questions, is still based on human-centric empirical research, but the given main study aims for further understanding of the data in relation to strategic and organisational practice. The move from extended knowledge towards application into practice thereby justifies the mixture of quantitative foundations and qualitative interpretations on its own.

At the same time, one of the major benefits of the conceptual model of Mobile Moments also describes a limitation of the same. The explicit guidance and (iterative) linkage between the layers offer detailed characteristics but are also highly dependent in their individual value by the methods, tools and interpretations applied.

The model provides suggestions and awareness about the factors to be considered but does not dictate its appliance. There might be scenarios, in which some of the factors do not apply or have multiple interpretations. This can either be considered as a limitation of the model but, with the intention of the given research, it rather describes the flexibility to be applied or transferred in various scenarios across multiple business contexts.
One of the most controversial topics, which also came up frequently during the interviews, remains the ethical viewpoint in terms of work-life integration of mobile business interactions. As further elaborated in Section 3.8, the theme is highly important and provides a vast set of argumentations, where to draw the line between the employee's work environment versus their leisure and free time.

The given research clearly acknowledges the importance and validity of the discussions, but decides to stop at this point, since it is its own philosophical topic, with its own relations in terms of different cultures, values and ideals (see e.g. Douglas (2014) or Feigon et al. (2018)). It aligns with the underpinning research aim, to better understand the related human cognitive characteristics to enhance mobile strategy consultancy, rather than justifying the potential impacts on work-life balances of particular user groups. Further research is suggested to pick up the topic and evaluate its validity separately.
Overall, the research has focused on the understanding and development of Mobile Moments in mobile strategies. In addition, and as described by the identified limitations, it is also available to further studies in areas such as technological advancement, organisational appliance, user analysis, ethics and empirical evaluation.

5.3 Conclusion

Reaching the conclusion of the given thesis, a critical reflection on the approach as well as the outcome will be provided. As a summary, the consecutive structure has shown its strength in combining theoretical concepts with practical experience on mobility and mobile business interactions.
The earlier illustrative example to understand why a person should pull out their mobile device for business purposes (see Chapter 1), has been investigated through various research steps and comes to the following conclusion: Within the idea of a Mobile Moment, an employee pulls out their mobile device, because they want a personal assistant supporting them in easing their daily job with the aim to create personal (emotional) and organisational value resulting in enhanced job performance.

Coming from initial expectations, intentions and thoughts about Mobile Moments, the focus has been framed into a theoretical and literature-based context. Discussions on major theories and concepts pushed the limits and identified the current gap of missing human cognitive factors in the same, resulting in a comprehensive set of research questions. The questions in combination with the developed cognitive model of Mobile Moments shaped the structure of the main study. Philosophical stances and research methodologies have been discussed and adapted in the design of this study. Streamlining the approach and analysis, continuously aimed towards the detailed conceptual model of Mobile Moments and its contribution to knowledge as well as the suggested application in practice, as illustrated in Section 5.1.2.

During the chapters, major milestones have been mentioned, which justify the academic flow of the research and align with the introduced research guide (see 1.6): (1) Section 2.4 applies the definition of mobile business interactions into the research's context; (2) The cognitive model in Section 2.11 defines the individual drivers of Mobile Moments; (3) The philosophical framework explains and justifies the type of outcome provided by the study (see 3.1); (4) Results of the conducted study are summarised and organised as the initial concept in Figure 4.4, which, in a final step, are taken forward into (5) the final and comprehensive conceptual model of Mobile Moments (see 5.1).

All of these steps in the consecutive research progress refer back to the initial motivation of transferring the concepts of flow and aha-moments into the world of mobile business. Both of the concepts have been introduced in Section 1.3 and framed the initial research context. Even more, these concepts have provided the continuous reference to the non-digital world and actual examples, as illustrated in Section 5.1.4.
Deriving the conceptual model of Mobile Moments, the integration themes like triggers, emotion or expectation, have been identified as important factors of making them work as a support in mobile workflows. The study's outcomes such as the wow-effect or exciety have become a major neologism within the area of Mobile Moments, raised from antagonists in empiricism (see 2.10) in combination with practical experience from the study (see 4.4).

In relation to the original research aim (see 1.7.1), a cognitive model has been developed based on extensive literature and critical review of the same in order to outline the major cognitive characteristics involved in enabling mobile business interactions. The conceptual model of Mobile Moments extended these characteristics of individual performance into an applicable artefact for mobile strategy consultancy which leverages workforce performance (see 2.1). It refers back to the introduced definitions of mobile strategy in Section 2.3 and builds on top of the established dependencies between an employee's cognitive motivation and their job performance (see 2.9).

Although the research does not provide a quantification of the results, it strengthens the overall understanding and comprehension of the beneficial relations from a model's perspective. The scenario-based appliance of the same will provide individual outcomes in business values depending on the business interactions identified. The underpinning constructivistic research philosophy justifies the outcome and opens the given research for further extensions (see 3.1).

Considering the actual research timeline of over three years, the level of data collected has offered a broad repository to be identified, related and evaluated critically. The combination of extensive documented literature, hundreds of pages of transcripts, resulting in hundreds of codes and themes have become its own data collection on mobility and Mobile Moments. The amount of academic effort in combination with ongoing professional client-advisory work and application, enables confidence to be placed in the practical relevance of the topic and, especially, the developed conceptual model.

The summarised outcome of the research is the fundamental extension to existing user-oriented tools and practices by the means of Mobile Moments. It enhances the common awareness and, even more, it provides a structured model to extend the focus from existing to-be-mobilised problems to the unknown, but promising, mobile-only opportunities. Having a comprehensive model for this purpose, changes the current definitions of a supportive mobile business interaction and brings the idea of a personal companion into actual mobile practice.
The suggested advancements and inclusion into mobile strategy consultancy, as a model and as part of the author's profession, has already become valuable and is going to be taken forward actively. Highlights such as the definitions of emotional bonds, shifts in interpreting business value and pinpoints on integration themes, are inherently becoming consultancy terminology and ready to be taken to clients. By this, the contribution not only relies on a theoretical and strategic model to be shown on paper, it also becomes part of, and is being internalised gradually by, mobile workforces and consultancy.

References

Abras, C., Maloney-Krichmar, D., and Preece, J. (2004). User-centered design. *Bainbridge, W. Encyclopedia of Human-Computer Interaction. Thousand Oaks: Sage Publications*, 37(4):445–456.

Adams, J., Keane, W., Dutton, M., and Steinmetz, G. (2005). *The politics of method in the human sciences: Positivism and its epistemological others*. Duke University Press.

Agger, B. (2011). itime: Labor and life in a smartphone era. *Time & Society*, 20(1):119–136.

Allmark, P., Boote, J., Chambers, E., Clarke, A., McDonnell, A., Thompson, A., and Tod, A. M. (2009). Ethical issues in the use of in-depth interviews: literature review and discussion. *Research Ethics Review*, (5):48–54.

Alvares, K. M. and Hulin, C. L. (1972). Two explanations of temporal changes in ability-skill relationships: A literature review and theoretical analysis. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, (14-4):295–308.

Amabile, T. M., Mueller, J. S., Simpson, W. B., Hadley, C. N., Kramer, S. J., and Fleming, L. (2002). Time pressure and creativity in organizations: A longitudinal field study. *Time Pressure and Creativity*.

Anderson, J. R. (2014). *Cognitive psychology and its implications*. Worth Publishers, New York, 7. edition. edition.

Anfara Jr, V. A. and Mertz, N. T. (2014). *Theoretical frameworks in qualitative research*. Sage publications.

Apple Inc. (2014). Apple und IBM gehen weltweite partnerschaft ein, um enterprise mobility zu veraendern. Retrieved from https://www.apple.com/de/newsroom/2014/07/15Apple-and-IBM-Forge-Global-Partnership-to-Transform-Enterprise-Mobility.

Ask, J. A. and Hammond, J. S. (2018). Building a mobile business case: It's a steep climb. *Business Case: The Mobile eBusiness Playbook*.

Baddeley, A. D. (1997). *Human memory: Theory and practice*. Psychology Press.

Baddeley, A. D. (2002). Is working memory still working? *European psychologist*, (7-2):85.

Barnet, T. and Simmering, M. (2015). Motivation and motivation theory. *Reference for Business: Encyclopedia of Management*.

Baumeister, R. F., Vohs, K. D., and Tice, D. M. (2007). The strength model of self-control. *Current directions in psychological science*, (16-6):351–355.

Bhaskar, R. (2010). *Reclaiming reality: A critical introduction to contemporary philosophy*. Taylor, Francis.

Blaikie, N. (2007). *Approaches to social enquiry: Advancing knowledge*. Polity.

Booth, P. (2014). *An introduction to human-computer interaction (psychology revivals)*. Psychology Press.

Borman, W. C., Ilgen, D. R., and Klimoski, R. J. (2003). *Handbook of psychology: Industrial and organizational psychology, Vol. 12*. John Wiley and Sons Inc.

Bose, D. C. (2012). *Principles of management and administration*. PHI Learning Pvt. Ltd.

Brooks, D. W. and Shell, D. F. (2006). Working memory, motivation, and teacher-initiated learning. *Journal of Science Education and Technology*, (15-1):17–30.

Bryman, A. and Bell, E. (2011). *Business research methods*. Oxford university press, 3rd edition.

Burrell, G. and Morgan, G. (1979). *Sociological paradigms and organisational analysis*, volume 248. London: Heinemann.

Caron, A. H. and Caronia, L. (2007). *Moving cultures: Mobile communication in everyday life*. McGill Queen's Press.

Carton, R. B. (2006). *Measuring organizational performance: Metrics for entrepreneurship and strategic management research*. Edward Elgar Publishing.

Champoux, J. E. (2010). *Organizational behavior: Integrating individuals, groups, and organizations*. Routledge.

Charbonnier-Voirin, A. and Roussel, P. (2012). Adaptive performance: A new scale to measure individual performance in organizations. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, 29(3):280–293.

Ciaramitaro, B. L. (2011). *Mobile Technology Consumption: Opportunities and Challenges: Opportunities and Challenges*. IGI Global.

Collins, H. (2010). *Creative research: the theory and practice of research for the creative industries*. Ava Publishing.

Coolican, H. (2014). *Research methods and statistics in psychology*. Psychology Press.

Corbetta, M. and Shulman, G. L. (2002). Control of goal-directed and stimulus-driven attention in the brain. *Nature reviews neuroscience*, 3(3).

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Sage.

Csikszentmihalyi, M. (2014). *Toward a psychology of optimal experience*. Springer.

Czarnecki, C. (2016). Design und nutzung einer industriespezifischen referenzarchitektur für die telekommunikationsindustrie. pages 807–814.

Czerniawska, F. and Toppin, G. (2010). *The economist: Business consulting: A guide to how it works and how to make it work*. Profile Books.

Dalal, R. S., Bhave, D. P., and Fiset, J. (2014). Within-person variability in job performance a theoretical review and research agenda. *Journal of Management*.

De Houwer, J. and Hermans, D. (2010). *Cognition and emotion: reviews of current research and theories*. Psychology Press.

Douglas, D. (2014). Why work-life integration trumps work-life balance. *Fast Company Inc*, (Retrieved from http://www.fastcompany.com/3030120/bottom-line/why-work-life-integration-trumps-work-life-balance).

Edinburgh Napier University (2016). Research integrity and governance. *Edinburgh Napier University Business School*, (Retrieved from http://staff.napier.ac.uk/faculties/business-school/research-integrityandgovernance/Pages/ResearchIntegrity.aspx).

Elliott, R., Fischer, C. T., and Rennie, D. L. (1999). Evolving guidelines for publication of qualitative research studies in psychology and related fields. *British journal of clinical psychology*, 38(3):215–229.

ENISO (2006). Din en iso 9241: Ergonomics of human-system interaction. *Berlin: Beuth*.

Eriksson, P. and Kovalainen, A. (2008). *Qualitative methods in business research*. Sage.

Eysenck, M. W. and Brysbaert, M. (2018). *Fundamentals of cognition*. Routledge.

Farnham-Diggory, S. (1992). *Cognitive processes in education*. Harpercollins College Division.

Feigon, M., Block, C., Guidotti Breting, L., Boxley, L., Dawson, E., and Cobia, D. (2018). Work–life integration in neuropsychology: a review of the existing literature and preliminary recommendations. *The Clinical Neuropsychologist*, 32(2):300–317.

Foerster, N. (2018). Mobile moments as part of ibm's mobile strategy. *Edinburgh Napier University*.

Foust, N. (2018). Market guide for mobile workforce management systems for utilities. *Gartner Inc.*

French, R. (2011). *Organizational behaviour*. John Wiley & Sons.

Gagne, R. M. and Fleishman, E. A. (1959). Psychology and human performance.

Gardner, K. M., Rush, A. R., Crist, M., Konitzer, R., and Teegarden, B. (1998). *Cognitive patterns: Problem-solving frameworks for object technology*, volume 14. Cambridge University Press.

Garhammer, M. (2002). Pace of life and enjoyment of life. *Journal of Happiness Studies*, pages 217–256.

Gero, J. S. and Hanna, S. (2015). *Design Computing and Cognition '14*. Springer Science & Business Media.

Gialdino, I. V. (2009). Ontological and epistemological foundations of qualitative research. *Forum Qualitative Social Research*, 10(2).

Gleason, A. W. (2015). *Mobile Technologies for Every Library*. Rowman and Littlefield.

Golden, L. and Figart, D. M. (2013). *Working time: International trends, theory and policy perspectives*. Routledge.

Gomm, R. (2009). *Key concepts in social research methods*. Palgrave Macmillan.

Goodin, R. E. and Tilly, C. (2008). *The Oxford handbook of contextual political analysis*. Oxford Handbooks Online.

Grix, J. (2002). Introducing students to the generic terminology of social research. *Politics*, 22(3):175–186.

Grix, J. (2010). *The foundations of research*. Palgrave Macmillan.

Grots, A. and Pratschke, M. (2009). Design thinking—kreativität als methode. *Marketing Review St. Gallen*, 26(2):18–23.

Guest, G., MacQueen, K. M., and Namey, E. E. (2011). *Applied thematic analysis*. Sage.

Halfpenny, P. and Procter, R. (2015). *Innovations in digital research methods*. Sage.

Hammersley, M. and Traianou, A. (2012). *Ethics in qualitative research: Controversies and contexts*. Sage.

@hand Corporation (2018). To archieve my mobile enterprise vision, i need ...

Hassin, R. R., Bargh, J. A., Engell, A. D., and McCulloch, K. C. (2009). Implicit working memory. *Consciousness and cognition*, (18-3):665–678.

Herzberg, F., Mausner, B., and Snyderman, B. B. (2011). *The motivation to work*, volume 1. Transaction publishers.

Hesselberth, P. (2018). Discourses on disconnectivity and the right to disconnect. *New Media And Society*, 20(5):1994–2010.

Hollyforde, S. and Whiddett, S. (2002). *The motivation handbook*. CIPD Publishing.

Horton, K. and Edwards, D. (2016). Exploring ideology in the adoption of socio-technical assemblages. *International Journal of Systems and Society (IJSS)*, pages 32–48.

Hwang, I., Jung, J., Kim, J., Shin, Y., and Seol, J.-S. (2017). Architecture for automatic generation of user interaction guides with intelligent assistant. *31st International Conference on WAINA*, pages 352–355.

IBM Corporation (2018a). Enterprise design thinking by ibm. (Retrieved from https://www.ibm.com/design/thinking).

IBM Corporation (2018b). European industry trends 2018. *IBM Market Development Insights*.

IBM Corporation (2018c). Ibm digital reinvention. (Retrieved from https://www-935.ibm.com/services/us/gbs/thoughtleadership/draction).

IBM Corporation (2018d). Ibm mobilefirst. (Retrieved from https://www.ibm.com/mobilefirst/de/de/mobile-solutions/).

Igbaria, M., Schiffman, S. J., and Wieckowski, T. J. (1994). The respective roles of perceived usefulness and perceived fun in the acceptance of microcomputer technology. *Behaviour & Information Technology*, (13-6):349–361.

Inglehart, R. (2004). *Human beliefs and values: A cross-cultural sourcebook based on the 1999-2002 values surveys*. Siglo XXI.

Jarrahi, M. H., Crowston, K., Bondar, K., and Katzy, B. (2017). A pragmatic approach to managing enterprise it infrastructures in the era of consumerization and individualization of it. *International Journal of Information Management*, 37(6):566–575.

Jones, J. W., Steffy, B. D., and Bray, D. W. (1991). *Applying psychology in business: The handbook for managers and human resource professionals*. Lexington Books.

Kanji, G. (2012). *Total quality management: Proceedings of the first world congress*. Springer Science & Business Media.

Kapadia, S. (2014). Rapid technology innovation creates a smart, mobile world. *Ernst & Young Global Limited - Global trends shaping the business world*.

King, N. and Horrocks, C. (2010). *Interviews in qualitative research*. Sage.

Kircher, T. and Gauggel, S. (2008). *Neuropsychologie der Schizophrenie*. Springer.

Korschun, D., Bhattacharya, C. B., and Swain, S. D. (2014). Corporate social responsibility, customer orientation, and the job performance of frontline employees. *Journal of Marketing*, (78-3):20–37.

Kotler, S. (2014). *The rise of superman: Decoding the science of ultimate human performance*. Houghton Mifflin Harcourt.

Krawczyk, D. C. and D'Esposito, M. (2013). Modulation of working memory function by motivation through loss-aversion. *Human brain mapping*, (34-4):762–774.

Krishnaveni, R. (2008). *Human resource Development: a researcher's perspective*. Excel Books India.

Kurose, C. (2013). Motivation, behavior, and performance in the workplace. *The George Washington University*.

Kurosu, M. (2009). *Human centered design*. Springer Science & Business Media.

Kurosu, M. (2018). *Human-computer interaction. Theories, methods, and human Issues*. Springer.

Kvale, S. and Brinkmann, S. (2014). *Interviews: Learning the craft of qualitative research interviewing*. Sage.

Landy, F. J. and Conte, J. M. (2009). *Work in the 21st century: An introduction to industrial and organizational psychology*. John Wiley & Sons.

Latham, G. P. (2012). *Work motivation: History, theory, research, and practice*. Sage.

Lewis, P., Thornhill, A., and Saunders, M. (2007). *Research methods for business students*. Pearson Education UK.

Lewis, S. (2015). Qualitative inquiry and research design: Choosing among five approaches. *Health promotion practice*, 16(4):473–475.

Linnes, C., Metcalf, B. R., and Shahijan, M. K. (2017). The future of apps: A smart investment for business. pages 293–313.

Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational behavior and human performance*, (3-2):157–189.

Locke, E. A. and Latham, G. P. (2013). *New developments in goal setting and task performance*. Routledge.

Lovett, T. and O'Neill, E. (2012). *Mobile context awareness*, volume 10. Springer.

Malik, A. and Rowley, C. (2015). *Business Models and People Management in the Indian IT Industry: From People to Profits*. Routledge.

Marshall, B., Cardon, P., Poddar, A., and Fontenot, R. (2013). Does sample size matter in qualitative research? a review of qualitative interviews in is research. *Journal of Computer Information Systems*, 54(1):11–22.

Marshall, R. (2017). Mobile strategy a key driver in the post-app eraople interact with them that will change. *Gartner Podcast Channel*.

Maslow, A. H. (1943). A theory of human motivation. *Psychological review*, 50(4):370.

Matthews, M. R. (1998). *Constructivism in science education: A philosophical examination*. Springer Science & Business Media.

McBride, D. K. and Schmorrow, D. (2005). *Quantifying human information processing.* Lexington Books.

McClean, C. and Shields, T. (2015). Secure and protect mobile moments. *The Mobile Security Playbook For 2015.*

Meyer, M. A. and Booker, J. M. (2001). *Eliciting and analyzing expert judgment: a practical guide.* SIAM.

Mills, J., Bonner, A., and Francis, K. (2006). Adopting a constructivist approach to grounded theory: Implications for research design. *International Journal of Nursing Practice*, 12(1):8–13.

Monsell, S. and Driver, J. (2000). *Control of cognitive processes: Attention and performance XVIII*, volume 18. MIT Press.

Mouzas, S. (2006). Efficiency versus effectiveness in business networks. *Journal of Business Research*, 59(10):1124–1132.

Mubaloo (2017). What is the post app era? *Mubaloo Innovation Lab.*

Mutualmobile (2012). Infographic: What is mobile strategy? *Mutual Mobile*, (Retrieved from https://mutualmobile.com/posts/infographic-what-is-mobile-strategy).

Myers, M. D. (2013). *Qualitative research in business and management.* Sage.

Nicol, D. (2013). *Mobile strategy: How your company can win by embracing mobile technologies.* Pearson Education.

Nielsen (2014). How smartphones are changing consumers' daily routines around the globe. *Mobile 2014*, (Retrieved from http://www.nielsen.com/us/en/insights/news/2014/how-smartphones-are-changing-consumers-daily-routines-around-the-globe.html).

Niklas, S. (2014). *Akzeptanz und nutzung mobiler applikationen.* Springer-Verlag.

Orlikowski, W. J. and Gash, D. C. (1994). Technological frames: making sense of information technology in organizations. *ACM Transactions on Information Systems (TOIS)*, 12(2):174–207.

Oswald, G. and Kleinemeier, M. (2017). *Shaping the Digital Enterprise.* Springer.

Oulasvirta, A., Rattenbury, T., Ma, L., and Raita, E. (2012). Habits make smartphone use more pervasive. *Personal and Ubiquitous Computing*, (16-1):105–114.

Palmer, D. E. (2015). *Handbook of research on business ethics and corporate responsibilities.* IGI Global.

Pinder, C. C. (2014). *Work motivation in organizational behavior.* Psychology Press.

Poulfelt, F., Olson, T. H., Bhambri, A., and Greiner, L. (2017). The changing global consulting industry. *Management Consulting Today and Tomorrow*, pages 5–36.

Priest, H., Roberts, P., and Woods, L. (2002). An overview of three different approaches to the interpretation of qualitative data. part 1: Theoretical issues. *Nurse researcher*, 10(1):30–42.

Puff, C. R. (2015). *Handbook of research methods in human memory and cognition*. Academic Press.

QSR International Pty Ltd. (2016). Nvivo product suite overview. (Retrieved from http://www.qsrinternational.com).

Reeves, M., Haanaes, K., and Sinha, J. (2015). *Your strategy needs a strategy: How to choose and execute the right approach*. Harvard Business Press.

Roberti, G. (2018). Mobility trends across european industries in 2018. *IDC: A Look Into 2018 Vertical Markets and SMBs*.

Ruggunan, S. (2014). Introduction to qualitative analysis and writing up your analysis: Thematic analysis. *Discipline of Human Resources Management*.

Sanada, M., Ikeda, K., Kimura, K., and Hasegawa, T. (2013). Motivation enhances visual working memory capacity through the modulation of central cognitive processes. *Psychophysiology*, (50-9):864–871.

Sathyan, J., Anoop, N., Narayan, N., and Vallathai, S. K. (2012). *A comprehensive guide to enterprise mobility*. CRC Press.

Schiffler, S. (2012). *Muss, darf und kann geschäftssoftware freude machen: Über die integration von joy of use aspekten in crm-anwendungen und computerspiele als gestaltungsvorbilder*. diplom.de.

Sharma, A. (1986). *Management and Job Performance*. Gyan Publishing House.

Sims, O., Jain, A., and Little, M. (2006). *Enterprise service oriented architectures: concepts, challenges, recommendations*. Springer Science & Business Media.

Sincero, S. M. (2012). Cognitive theories of motivation. *Explorable.com*, (Retrieved from https://explorable.com/cognitive-theories-of-motivation).

Skordby, L. (2016). Ibm digital reinvention: The road to the cognitive future runs through operations. (Retrieved from https://louiseskordby.wordpress.com/2016/12/14/the-road-to-the-cognitive-future-runs-through-operations).

Sonnentag, S. (2003). *Psychological management of individual performance*. John Wiley & Sons.

Spaulding, W. D. and Simon, H. A. (1994). *Integrative views of motivation, cognition, and emotion*, volume 41. University of Nebraska Press.

Sprenger, M. (1999). *Learning and memory: The brain in action*. ASCD.

Steel, P. and König, C. J. (2006). Integrating theories of motivation. *Academy of Management Review*, (31-4):889–913.

Sternberg, S. (1969). The discovery of processing stages. *Acta psychologica*, 30:276–315.

Still, B. and Crane, K. (2017). *Fundamentals of user-centered design: A practical approach*. CRC Press.

Stone, D. L. and Deadrick, D. L. (2015). Challenges and opportunities affecting the future of human resource management. *Human Resource Management Review*, (25-2):139 – 145.

Strauss, A. L. (1987). *Qualitative analysis for social scientists*. Cambridge University Press.

Sturman, M. C. (2007). The past, present, and future of dynamic performance research.

Syafar, F., Koronios, A., and Gao, J. (2018). Mobile technologies in asset maintenance. pages 245–253.

Taylor, G. R. (2005). *Integrating quantitative and qualitative methods in research*. University press of America.

Thalheim, B. (2014). Models, to model, and modelling-towards a theory of conceptual models. *Collection of recent papers*.

Thomas, K. W. (2009). *Intrinsic motivation at work: What really drives employee engagement*. Berrett-Koehler Publishers.

Topi, H. and Tucker, A. (2014). *Computing Handbook: Information systems and information technology*, volume 2. CRC Press.

Topolinski, S. and Reber, R. (2010). Gaining insight into the "aha" experience. *Current Directions in Psychological Science*, 19(6):402–405.

Trochim, W. M. (2006a). Deduction and induction. Retrieved from http://www.socialresearchmethods.net/kb/dedind.php.

Trochim, W. M. (2006b). Positivism and post-positivism. Retrieved from http://www.socialresearchmethods.net/kb/positvsm.php.

Unhelkar, B. (2008). *Handbook of Research in Mobile Business: Technical, Methodological and Social Perspectives: Technical, Methodological and Social Perspectives*. IGI Global.

Van de Ven Vernon, A. H. (2000). *Organizational change and innovation processes: theory and methods for research*. Oxford University Press.

Vartiainen, J. E. A. M. (2006). *Mobile Virtual Work*. Springer.

Vermesan, O., Eisenhauer, M., Sunmaeker, H., Guillemin, P., Serrano, M., Tragos, E. Z., Valino, J., van der Wees, A., Gluhak, A., and Bahr, R. (2017). Internet of things cognitive transformation technology research trends and applications. *Cognitive Hyperconnected Digital Transformation; Vermesan, O., Bacquet, J., Eds*, pages 17–95.

Vroom, V. H. (1964). Work and motivation. *NY: John Wiley & sons*, pages 47–51.

Wächter, M. (2016). Mobile ready enterprise. pages 201–214.

Wade, C. (2010). *Psychology*. Prentice Hall, Upper Saddle River NJ, 3rd canadian ed. edition.

Wagman, M. (1995). *Sciences of cognition: Theory and research in psychology and artificial intelligence*. Greenwood Publishing Group Inc.

Wajcman, J. (2008). Life in the fast lane? towards a sociology of technology and time. *The British journal of sociology*, 59(1):59–77.

Weed, D. L. (2005). Weight of evidence: a review of concept and methods. *Risk Analysis*, (25-6):1545–1557.

Weiss, H. M. and Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work.

Wilken, R. and Goggin, G. (2013). *Mobile technology and place*. Routledge.

Wroblewski, L. (2013). Google ceo eric schmidt on mobile first. (Retrieved from https://www.lukew.com/ff/entry.asp?1270).

Zablah, A. R., Franke, G. R., Brown, T. J., and Bartholomew, D. E. (2012). How and when does customer orientation influence frontline employee job outcomes? a meta-analytic evaluation. *Journal of Marketing*, (76-3):21–40.

Zimbardo, P. G. and Gerrig, R. J. (2008). *Psychologie*. Pearson Studium, München; Boston [u.a.], 18., aktualisierte aufl. edition.

Zorn, T. (2008). Designing and conducting semi-structured interviews for research. *Waikato Management School*.

Appendices

A Interview artefacts

Edinburgh Napier University Business School
Topic Summary for Interviews

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Prepared for

Edinburgh Napier University, Edinburgh (GB)
July 2016

Topic

Mobile Moments: Understanding the influential factors of human cognition and motivation as drivers of impulsive mobile business.

Overview

The advancement of mobile technology and continuous availability has changed human interactions and experiences in many terms and is just stepping into the context of mobile business. One of the study's major drivers is therefore grounded in understanding employee's cognitive needs to enhance job performance by the value of using mobile technology as a supportive system in every day business. The research promotes the idea of optimising individual's performance by enabling parallel activities with a fairly new concept called "Mobile Moments". A Mobile Moment represents a situation, in which a human being is in the spontaneous need of immediate interaction with information independent to his current location, time or task (McClean and Shields, 2015). Hereby triggers of behaviour and especially the foundations of immediate motivation at an explicit point of time are key to understand the employee's motivational model (Steel and König, 2006). The research uses and discusses psychological approaches of human cognition and motivational behaviour to identify conditions of individual's Mobile Moments as key integrator of technical appliance by mobile technology. The entrepreneurial concept of work-life integration illustrates the early perception of this crucial game changer (Douglas, 2014), whereby Mobile Moments highlight the practical benefit of understanding the human cognition to meet the (un-)conscious expectation and paradigms for information access whenever, wherever and whatever.

With effectiveness, performance and behaviour, literature has already a broad collection of concepts stimulating the organisational demand on job performance in general (Kurosu, 2009). Nevertheless, cognitive triggers of individual's motivation, skill and ability on a specific task open up the influential gap in organisational integrity. This is reasoned by the lack of involvement of human inner characteristics like attitude, capacity and satisfaction. The gap represents the key issue addressed by the research combining theoretical models of cognition, technical aspects of mobility and practical understanding of business into a comprehensive framework for Mobile Moments.

Primary aimed outcome of this research and its contribution to practice is represented by this framework to offer suggestions for enhancing mobile consultancy by the means of Mobile Moments. The discussion and analysis of practical experience confronted with theoretical concepts will hereby form the most important facilitator and build the bridge between theory and practice. Qualitative input among different client industries and mobile strategies further crystallise the constructed framework and its interpretive consensus.

Douglas, D. (2014). Why work-life integration trumps work-life balance, *Fast Company Inc* .

Kurosu, M. (2009). *Human Centered Design: First International Conference, HCD 2009, Held as Part of HCI International 2009, San Diego, CA, USA, July 19-24, 2009 Proceedings*, Vol. 5619, Springer Science & Business Media.

McClean, C. and Shields, T. (2015). Secure and protect mobile moments, *The Mobile Security Playbook* .

Steel, P. and König, C. J. (2006). Integrating theories of motivation, *Academy of Management Review* (31-4): 889–913.

Nico Förster – IT Architect (Enterprise & Mobile Solutions) – IBM Deutschland GBS GmbH

Edinburgh Napier University
Edinburgh (GB)

Munich University of Applied Sciences
Munich (D)

Strascheg Center for Entrepreneurship
Munich (D)

IBM Deutschland GmbH
Ehningen (D)

Consent for participation in a research interview

DBA Study Interview – Nico Foerster (M.Sc.)
Edinburgh Napier University
2016/2017

I agree to participate in a doctoral research project by Nico Förster from the Edinburgh Napier University, Scotland. The purpose of this document is to specify the terms of my participation in the project as I will be interviewed because of my expertise in the subject matter.

1. I have been given sufficient information about this research project. The purpose of my participation as an interviewee in this project has been explained to me and is clear.

2. My participation as an interviewee in this project is voluntary. There is no explicit or implicit coercion whatsoever to participate.

3. Participation involves being interviewed by a researcher from the Edinburgh Napier University. The interview will last approximately 60 minutes. I allow the researcher to take written notes during the interview. I also shall allow the recording (by audio/video tape) of the interview. It is clear to me that in case I do not want the interview to be taped I am at any point of time fully entitled to withdraw from participation.

4. I have the right not to answer any of the questions. If I feel uncomfortable in any way during the interview session, I have the right to withdraw from the interview.

5. I have been given the explicit guarantees that, if I wish so, the researcher will not identify me by name or function in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. In all cases subsequent uses of records and data will be subject to standard data use policies at the Edinburgh Napier University (Data Protection Policy).

6. I have been given the guarantee that this research project has been reviewed and approved by the Edinburgh Napier University Ethics Committee. For research problems or any other question regarding the research project, the Edinburgh Napier University Ethics Committee may be contacted.

7. I have read and understood the points and statements of this form. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

8. I have been given a copy of this consent form co-signed by the interviewer.

_____ _____
Participant's Signature Date

_____ _____
Researcher's Signature Date

For further information, please contact:
Nico Foerster
E-Mail: [redacted]
Phone: [redacted]

Frequently Asked Questions

Doctor of Business Administration
Nico Förster (M. Sc.)

Edinburgh Napier University, Edinburgh (GB), 2017

How should I use this FAQ:
As a helper for common questions on the overall interview process. The *italic* note provides a short summarised answer to every question. For more information, this summary is followed by a more detailed description. Of course, if you have any questions or doubts about the interview in addition to this FAQ, feel free to contact the researcher [=interviewer] mentioned below.

What is the general purpose of the interview?
Practical experiences and thoughts. The purpose of the interview is to include your practical insights and viewpoints into the research argumentation within the researcher's doctoral thesis. You have been identified as an experienced practitioner [in private or business] with valuable standpoints and knowledge about mobile business. In addition to this, your professional viewpoint on mobile strategy consultancy is highly appreciated.

What will be the format of the interview?
Semi-structured interviews. This means the researcher prepared a few topic areas he intends to discuss and has a set of predefined questions. The sequence and occurrence of questions is highly dependent on the pace and flow of the interview. The major aim is to have a meaningful conversation with you to get a better insight into your experience.

What will be the overall topic of the interview?
Impulsive mobile interactions in business. In advance of the interview, a short textual abstract will be provided. Due to time constraints, you can also use a few minutes of the interview, to make yourself familiar with the research topic and post questions to the interviewer, if needed. In some cases this will also be the kickoff into the interview conversation.

Why is this research important and why should I take part?
Understanding further opportunities of mobile business. The study is part of a research in business administration, therefore the outcome is expected to have scientific impact on theoretical models but also aims to provide useful hints for future mobile strategy consultancy in practice. Especially the second aim values your participation and your highly appreciated practical input. By taking part, you have the opportunity to put your knowledge in a comprehensive piece of research, which might cross your professional path in the future again.

What if I do not want to participate?
Participation is completely voluntary and any point of time. You are able to withdraw as a participant without any further reason and your involvement can be stopped at any point (also during the interview and all former input will be deleted). During the interview you are also free to not answer specific questions (without providing a reason), if you feel uncomfortable doing so.

What will happen to any information I give?
Anonymised qualitative input used for analysis. Any information you provide is going to be anonymised and handled in appropriate manner (defined by Napier University's ethics guidelines (Edinburgh Napier University, 2016)). It will be analysed as part of the mentioned research context, which is done only by the researcher stated below. Your information is valued as input for a definition and evaluation of a new comprehensible model.

How long will the interview take?
The interview will take about 45-60 minutes. Depending on the conversation flow and potential deep dives into several topics.

Nico Förster – IT Architect (Enterprise & Mobile Solutions) – IBM Deutschland GBS GmbH

Edinburgh Napier University Edinburgh (GB)	Munich University of Applied Sciences Munich (D)	Strascheg Center for Entrepreneurship Munich (D)	IBM Deutschland GmbH Ehningen (D)

Why have I been chosen to take part?
You have been recognised as a subject matter expert in your network The researcher appreciates and expects your valuable input on the topic since you have been recognised because of your past projects, job positions and/or references. In most cases you have already met or worked with the mentioned researcher. In some other case you have been referenced by others as a subject matter expert.

How and where is the interview going to be conducted?
Preferably a face-to-face session in a quiet environment. The administrative tasks of location, schedule and room booking will be aligned with you by further notice. Please make sure your are available in the scheduled timeframe and free of any avoidable distractions (phone calls, messages, etc.). The interviewer suggest to turn off your mobile devices completely. If you have any preferred location, please let the researcher know as it could ease administrations.

What kind of knowledge will be expected from me?
Mobile in general and in business. Focus lies on your experiences in the broader context of mobility, mobile strategy, -business and -technology. Interview questions will grasp on your personal experience and subjective thoughts, rather than statistics and facts.

What does participation involve?
The interview and a short introduction. Your participation is currently limited to the interview timeframe and eventually some time in advance to make yourself familiar with the topic using the mentioned abstract. In some cases and if interested, you might also be contacted for follow up sessions or other participations (voluntary).

Who is conducting the interview and study?
Nico Foerster (M.Sc.) as part of his DBA at Edinburgh Napier University, UK.

Is the interview going to be recorded?
Yes. The interview is going to be audio recorded for the sake of transcription and analysis.

What language will the interview be conducted in?
Preferably English or German.

Are my personal data handled confidentially?
Yes. All data collected in the study (including recordings) will be anonymised for the purpose of only this research and archived appropriately (Napier University's ethics committee approval accomplished)

What will happen after the interview?
Your input will be analysed and interpreted in the research context. No further interactions will be expected. Potentially you will be asked for follow up sessions or further input, but you are free to decline any further involvements. If interested, you can also sign up for a notification as soon as the research is completed and available.

Who do I contact if I have any further questions, comments or concerns?
Researcher: Nico Foerster [redacted]
Supervisor: Dr. Hock Tan [redacted]

References

Edinburgh Napier University (2016). Research integrity and governance, *Edinburgh Napier University Business School* ([Online] Available from: http://staff.napier.ac.uk/faculties/business-school/research-integrityandgovernance/Pages/ResearchIntegrity.aspx. [Accessed: 04/06/2016]).

Questionnaire

Overall

Name:

Date & Location:

Notes:

Age:

Job Role:

Company:

Introduction and Abstract

1. Could you please give me some insights in your career development. How did you get here, roughly?

2. What are the key areas you focused on in the last 5 years?

3. What do you think was your "most mobile" project?

4. How would you see yourself and your skill as a mobile user?

5. What are you mostly using your mobile devices for -¿ in private sphere?

Mobile Moment as a consumer

6. Regarding the abstract you read before, do you have any questions about the abstract itself (terminology or language)?

7. How would you now define a Mobile Moment for yourself.

8. Please describe your personal experience with these kind of Moments in everyday life? Do you recognise them on yourself or others?

9. Do you remember particular situations of you recognising yourself having an "unconsious" mobile interactions?

10. Could you please further elaborate, do you remember a glance what was happening around you?

11. Do you have any assumption what might have driven you internally?

Mobile Moment as a mobile worker and a colleague

12. In a broader sense, where do you think unconscious mobile interaction is involved in your business?

13. Where do you think conscious mobile interaction is involved in your business?

14. Where do you usually put your phone/device during meetings or other business sessions? Have you experienced dependencies between meeting roles and in which situations are you mostly interacting with it?

15. Do you think there is a difference between a mobile moment during a business session compared to the spare time in between? If yes, please explain?

16. In particular, could you please name situations while working, in which you are touching your device?

17. During your meetings, is their anything particular you recognised on your colleagues using mobile devices? Anything you experienced positive or negative?

Mobile Moment as a strategist

18. What do you think has happened in the users mind right before he interacts with his mobile device? Do you have any assumption?

19. How would you define the business value in this context? If the user perceives information or when he interacts with it?

20. What are your thoughts on spontaneous mobile interactions in future mobile business?

21. Have you heard about mobile context-awareness? Could you explain it or I will also give you an example.

22. Do you think those related information could support mobile employees?

Nico Förster – IT Architect (Enterprise & Mobile Solutions) – IBM Deutschland GBS GmbH

Edinburgh Napier University
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Munich (D)

IBM Deutschland GmbH
Ehningen (D)

Conclusion

23. Overall: Do you think Mobile Moments could be part of mobile strategies?

24. Any additional information or comments you would like to provide?

25. Would you like to receive a summary of the final report of this study?
    (Yes) (No)

26. Thank you very much for your participation.

Nico Förster – IT Architect (Enterprise & Mobile Solutions) – IBM Deutschland GBS GmbH

Edinburgh Napier University
Edinburgh (GB)

Munich University of Applied Sciences
Munich (D)

Strascheg Center for Entrepreneurship
Munich (D)

IBM Deutschland GmbH
Ehningen (D)

B Follow-up presentation

Mobile Moments as part of IBM's Mobile Strategy

by Nico Foerster

Edinburgh Napier University
Doctor of Business Administration Programme

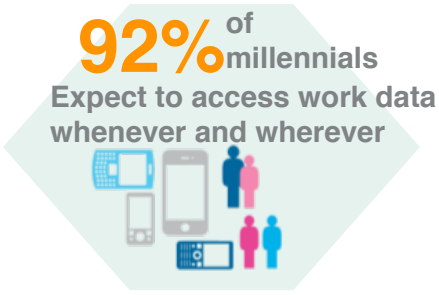
Content

- Business context and background
- Target area - IBM's mobile strategy
- Integration and anchors
- Strategy proposal
- Example

Key motivator and potential

Focus on mobile paradigms

Single transactions → personalized **engagement experience optimisation**



Baseline

Mobile Moments conceptualize the shift in mobile business:

- Access information **whenever** needed
- Promote context-related styles of interactions **wherever** appropriate
- Provide illustrations of **whatever** is currently useful

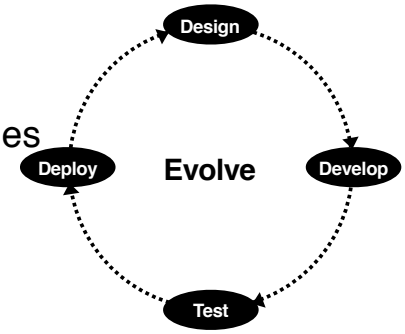
IBM Services—Starting with Digital Reinvention™

iX Mobile Services

Mobile Advise	Mobile Accelerate	Mobile at Scale	IBM Design Thinking	Mobile Apps

Mobile Engagement Model

Understand client's business goals and opportunities
Promote cutting-edge mobile technology
Define a client-specific mobile strategy
Implement mobile initiatives
Evolve and optimise the digital journey



MINIMISED SLIDE DUE TO IBM CONFIDENTIAL INFORMATION

Mobile Advise Internal View

Engagement Model—Overview

Prepare	Engage	Scope	Agree	Deliver	Ongoing Advisory Services

Locate Mobile Moments in IBM's mobile strategy

Extend *Engage* and *Scope*: IBM Design Thinking

Understand the context	Day-in-a-life	Personal Pain Points	Value vs. effort	Opportunities

Define Mobile Business Interactions

Value of employee's activity (whenever)
Access to business context (wherever)
Value of content (whatever)

The Business School
Edinburgh Napier

Locate Mobile Moments in IBM's mobile strategy

Engage and Scope: Enterprise Design Thinking by IBM

Understand the context	Day-in-a-life	Personal Pain Points	Value vs. effort	Opportunities

Define Mobile Business Interactions

Value of employee's activity (whenever)
Access to business context (wherever)
Value of content (whatever)

Nico Foerster
05/2018

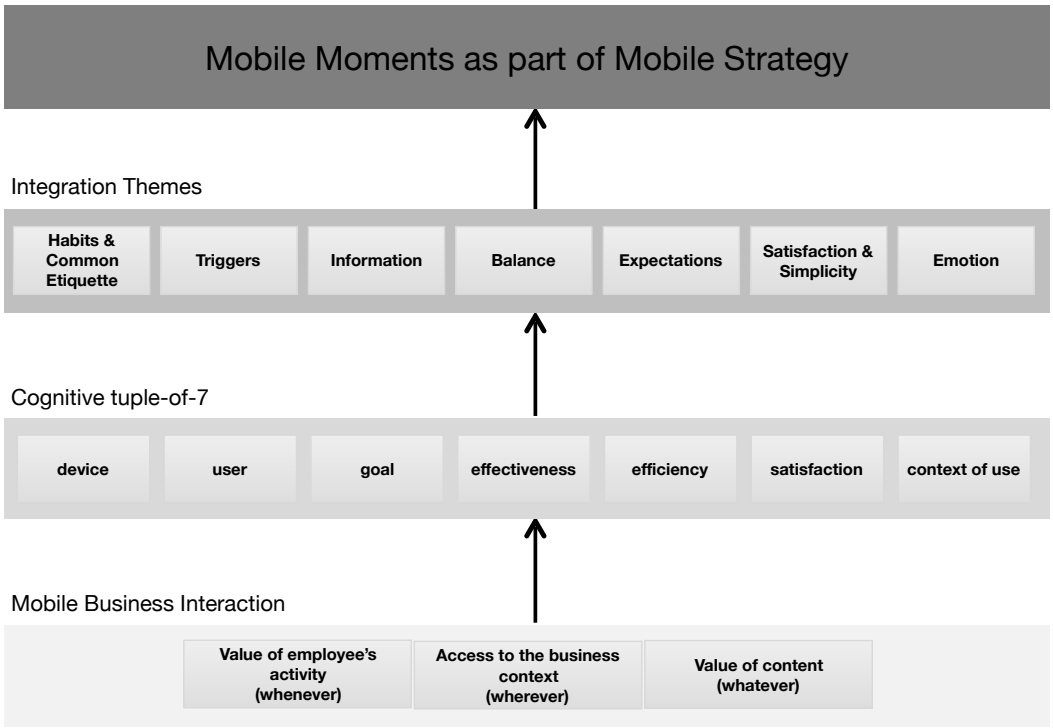
Locate Mobile Moments in IBM's mobile strategy

Proposed addition in mindset:

Solve a current pain point → Consider the **next** pain point

„The next pain point might become a Mobile Moment"

Identified by Mobile Business Interaction
Defined by Cognitive tuple of 7
Applied by Integration Themes



Example - Field Worker (summary)

Identify Business Interaction of next pain point	*After arrival at a business location, the user has to do a security check on the asset before starting to work on it*
Define the Mobile Moment (cognitive perspective)	Device: *Mobile Tablet* User: *Experienced with mobile technology* Goal: *Complete security check* Effectiveness: *Correct documentation* Efficiency: *Fast completion* Satisfaction: *Ease in use* Context of use: *Outdoors*
Apply/Integrate the personal Mobile Moment (conceptual perspective)	Habits: *Considering time on the road and patterns* Triggers: *Arrival at business location* Information: *Required data for security check* Balance: *Minimal personal set of input required* Expectation: *Minimize effort and suggestions* Satisfaction: *No distraction from current work* Emotion: *Appreciate his personal companion*

A Mobile Moment aims for leveraging workforce performance with specific and personal mobile interactions to support the employee in his current (work-)flow

The Business School
Edinburgh Napier University

Nico Foerster
[redacted]

C Interview transcripts

The transcribed interviews may be provided upon request

D Application as part of IBM's consultancy

In addition to the theoretical outcomes of the research, a concrete linkage and evaluation against a mobile strategy practice provides a more elaborate and comprehensive view on the given results. For this purpose, and as outlined in Section 3.7, a specific follow-up study has been conducted.
Results of the main study have been summarised and prepared to provide a compressed view on the main pillars of the conceptual model and are taken into relation and integration with an active mobile strategy. For the purpose of expert feedback on the model and outcome derived, IBM's MobileFirst and Digital Reinvention strategies (IBM Corporation, 2018d,c) are used as a sample usecase to integrate the conceptual model of Mobile Moments into current consultancy practice. These strategies have been introduced in Section 2.3.

Taking the IBM's Digital Reinvention strategy as a potential target strategy for the derived conceptual model of Mobile Moments, the follow-up study discusses the opportunities in this sample usecase and illustrates related integration points. Subject matter expertise helps to outline the practical relation and appropriateness as part of the strategy. It also outlines current gaps, which the newly developed model targets to fill.
The findings and discussions of the follow-up study are also used to support the overall model and justification of used research approach. In addition, it also provides some smaller adjustments, which can be considered as variables in the case of IBM.

As the main result, the follow-up study supports the value of Mobile Moments in addition to the existing concepts within IBM's mobile strategy. It appreciates the extensions of a supportive mobile technology into usecases, in which the current strategy is not able to identify new opportunities based on unconscious interactions. As another outcome to be highlighted, the results suggest considering a level of flexibility in the conceptual model to support variability in characteristics of the cognitive factors and the integration themes. Some of these might become more important than others, based on the actual usecase or, respectively, the Mobile Moment identified.

In comparison to the main study, the analytical approach of the follow-up study remains on a concrete and minimised set of discussions about the conceptual model itself and especially its application and integration as part of IBMs Digital Reinvention Strategy. Findings of the interviews are presented within the overall context including their relation to the actual model. The discussion follows the finding immediately in order to show its impact or confirmation on the usage of the model. Details on interviewees and their personae can be found as part of the combined subjects' demographics (see Section 3.6.2).

Thoughts on location and target

With the aim of integrating the conceptual model of Mobile Moments into the Digital Reinvention strategy, a fitting starting point can be located within the engagement model's step of **Engage** and **Scope** as introduced in 2.3. Currently the process includes several aims such as understanding the context via day-in-a-life scenarios in order to identify potential user pain points, which then can be evaluated and targeted with mobile technology. This process is an integral part of the mentioned Design Thinking approach (IBM Corporation, 2018a) and has shown its practical usage as described as follows:

> *With day-in-a-life and further research methods, we are currently able to document the pain points the user mentions to us in the workshops. These are used to define and prioritise opportunities accordingly.*
> (Field notes: Respondent K)

However, respondents also agree on the fact that the practice of pain points has its limitations in terms of its validity and focus:

> *Pain points, as we currently practice them, are more likely a snapshot and potentially we miss the further path or are not looking further.*
> (Interview: Respondent J)

> *Yes, in fact, to not stop at the first pain point, rather explore the consequences and what to look at additionally.*
> (Interview: Respondent I)

> *I am completely with you, that we are focusing too much on the pain points, which the user tells us. [...] We are not really getting much, just by asking what is your current problem.*
> (Interview: Respondent K)

This limitation of the current mobile engagement model focusing on pain points suggested by end-users based on their current workflows provides a comprehensive starting point to integrate the model of Mobile Moments. Considering the result of the main study as well as the definition (see 2.5 and 4.4), a Mobile Moment goes beyond the replacement of current technology and suggests taking advantage of mobile-only potentials to fulfil a need the user might not yet be aware of. As part of the follow-up study, the following figure illustrates the mind shift from the current approach towards an extension, not a replacement, by Mobile Moments (see Figure D.1).

Thoughts on model and opportunity

Considering the entry or starting point of integrating the model into IBM's Digital

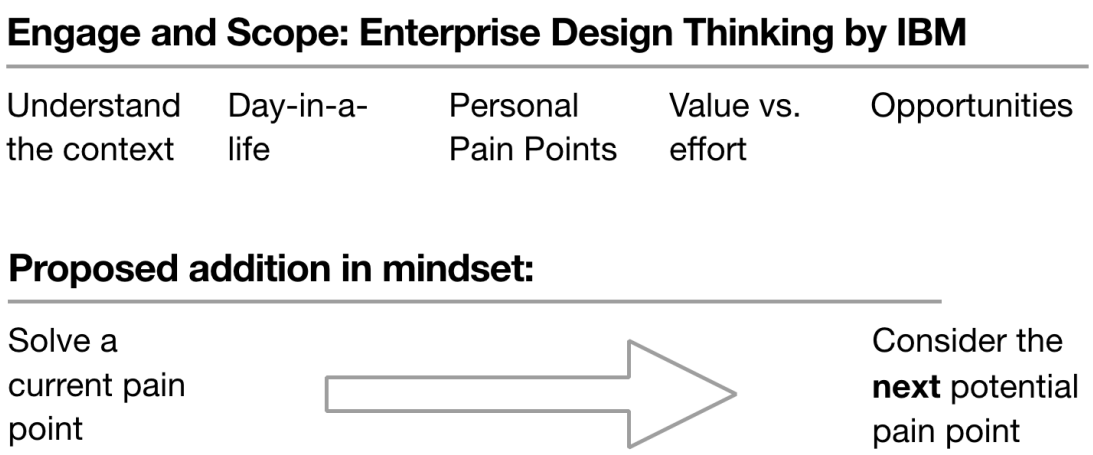


Figure D.1: Extension of design thinking by Mobile Moments (Foerster, 2018).

Reinvention strategy, the follow-up study also includes some feedback on the conceptual model itself and its opportunities in actual practice. The respondents highlight two important aspects, in which the model can be used for benefit. At first, the defined model provides some additional support and awareness of the topic itself, which is appreciated by the respondents. It gives a comprehensive guideline, what to look at in order to identify, define and apply a Mobile Moment, respectively a pain point.

> *The definition of Mobile Moments is quite cool. It opens up the whole thing, especially since we are missing some guidelines resulting in a potential wrong application of the current model. And also using the starting point of whenever, wherever and whatever is quite a nice approach.*
> (Interview: Respondent J)

And secondly, the suggested layering into mobile business interaction, cognitive tuple of 7 and integration themes, as described by the model in Section 5.1 provides guidance on how to approach Mobile Moment in practice. The respondents appreciate and support the model's flow and are also already considering the practical impact of it.

> *I like the idea and find it interesting, to split up the Mobile Moment into those different aspects, in order to assess and evaluate it extensively. The different layers [Identify, Define, Apply] also make sense to me, but might also be kind of similar in each Mobile Moment.*
> (Interview: Respondent I)

In general, this aligns with and confirms the overall aimed contribution to practice to provide a comprehensive conceptual model of Mobile Moments to (1) raise awareness

about facilitators and to (2) guide its integration as part of mobile strategy consultancy (see 1.7.5). The overall topic's awareness comes from the comprehension and guidance, whereby the integration is pushed by the different layers on top of the existing strategy.

In addition to the support and confirmation on comprehension of the respondents in the follow-up study, there were also some critics or optimisations, which are considered in the upcoming model's definition. One already mentioned "The different layers also make sense to me, but might also be kind of similar in each Mobile Moment" (Interview: Respondent I) is taken forward as a useful note in defining the characteristics in the model. In some cases their necessity or value might differ or duplicate others depending on the particular Mobile Moment. Other thoughts mostly focus on a particular wording to be considered in the final description of the model and also the excitement about an actual field test of the model (in reference to 5.2).

> *I have read the terminology "Integration of Mobile Moment". This sounds to me quite technical, although I understood you are talking about the appliance of the model, not an integration towards a backend for example.*
> (Interview: Respondent I)

> *In general, yes I can comprehend the approach behind that and it extends the existing Design Thinking, which I think, is a cool enhancement to be taken forward.*
> (Interview: Respondent J)

> *I would go with you taking this into practice.*
> (Interview: Respondent K)