



# A fuzzy framework assessing corporate resource management for the mobile content industry



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## ABSTRACT

The assessment of a company's strategic endowment of resources, competencies and capabilities (R&C&Cs) and the identification of core R&C&Cs are key issues in strategy and technology management, though these processes suffer from the lack of consolidated models and methods to support their operationalization. This study proposes a Fuzzy Assessment Framework to evaluate the core status of a company's R&C&Cs, thus orienting resource management towards the actual sources of competitive advantage. The research process leverages multiple case study and fuzzy set theory to gather and analyze data from a set of twenty-six technology companies operating in the mobile content industry. The resulting Fuzzy Assessment Framework supports the concrete evaluation and management of resources and shows significant properties (i.e. accuracy, comprehensiveness, insight) thanks to the use of fuzzy measurements and Fuzzy Likert scales.

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## 1. Introduction

The investigation of the role of corporate resources in influencing a company's performance has been a *leitmotiv* in the last three decades of the Strategy and Technology Management research. Starting from the early academic studies by Wernerfelt (1984) and Barney (1991), along with the seminal practitioner-oriented work "The core competence of the corporation" by Hamel and Prahalad (1990), scholars have long debated about if and how tangible and intangible resources, competencies and capabilities (R&C&Cs) may affect the achievability and sustainability of competitive advantage – that is, a continuative superior profitability in comparison to competitors (Grant, 1991).

What is now largely agreed upon in the strategists community is that, while a company may own a wide portfolio of R&C&Cs, only a subset of them is actually characterized by a "core" status, meaning the resources are a unique and not easily replicable source of positive differentials the company can leverage to outperform rivals (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993; Powell and Dent-Micallef, 1997); the other corporate resources may be either considered a strategic necessity, a hygienic competitive factor essential for survival rather than a cornerstone of advantage (Clemons and Row, 1987), or even unnecessary – a possible target for divestiture to recoup efficiency. Handling the R&C&C endowment is made even more complex by the industry's dynamicity experienced in many markets (Ansoff, 1985; Hamel and Välikangas, 2003; Van Notten et al., 2004), which makes the resources' core status possibly change over time (Wu, 2010) and confers a significant importance to the process of resource management (Wu, 2010; Bridoux et al., 2013).

The identification of core R&C&Cs has been tackled by several studies (see Wernerfelt, 1984; Barney, 1991; Hamel

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and Prahalad, 1990; Peteraf, 1993; Teece et al., 1997): however, the approaches and frameworks exposed so far are largely conceptual, as they only aim at listing the essential characteristics a R&C&C should possess to hold a core status without proposing a method to properly operationalize the assessment. Such shortcoming in the extant R&C&C literature and practice may severely jeopardize the actual adoption of these valuable concepts by strategists and decision makers, while leading to question the usefulness and soundness of the theory itself (Newbert, 2007; Carmeli, 2004).

A clear literature and methodological gap emerges regarding this matter. In order to address it, in this study we posit and investigate the following research questions:

- (i) how can the R&C&C core status assessment – i.e. contribution to competitive advantage – be methodologically performed and operationalized (RQ1)?
- (ii) how can R&C&C management – i.e. the management of R&C&C's lifecycle – be methodologically performed and operationalized (RQ2)?

This study hence proposes an original multi-methods framework leveraging multiple case studies and fuzzy set theory to carry out the assessment of R&C&Cs and drive resource management.

From an empirical standpoint, we draw our data from the mobile content industry, i.e. the market for mobile, non-voice, digital content and services (Kuo and Yu, 2006; Ghezzi, 2012; Ghezzi et al., 2014) by means of a multiple case study involving twenty-six mobile technology companies. This industry is characterized by a presence of a focal actor, the mobile network provider (MNO), with a significant centrality in the value network and strong strategic ties with the other mobile players. Such condition is convenient for this study, since it makes MNOs' R&C&C endowment observable by all the other companies in the market, and these players' representatives are hence eligible testers to assess the R&C&C core status. The industry was selected also for its dynamicity, since the technology, business and social changes experienced in it force decision makers to allot a high priority to the process of resource assessment and management (Kuo and Yu, 2006; Ghezzi et al., 2014; Funk, 2007; Chen and Cheng, 2010; Hipólito, 2007; Ghezzi, 2013).

Our goal is to provide a fuzzy reference framework for assessing and managing resources, with specific reference to the mobile content industry and the MNOs' R&C&C endowment. As proposed in previous studies (e.g., see Hsieh, 2013), the research process we craft has a multi-method nature, depicted in Fig. 1.

First, the study leverages a literature review on the RBV (resource-based view) and the DCA (dynamic capabilities approach) to identify the “Five Core Tests”<sup>3</sup> to be used when assessing the core status of resources, competencies and capabilities. Second, qualitative information and data are gathered through a multiple case study on twenty-six companies operating in the mobile content industry. A total of sixty-eight respondents are interviewed, and the case studies are coded to identify and categorize a set of sixteen R&C&C for mobile

network operators (third step of the framework); in parallel, the respondents are asked to define a set of generic guidelines for resource management, and discuss synergies and dysergies within the portfolio of sixteen R&C&Cs. Fourth, the fuzzy set theory is leveraged to craft a fuzzy survey based on fuzzy measurement and Fuzzy Likert scales (FLS) in order to gather an assessment of the R&C&C status from fifty-two respondents – representing a subset of the experts interviewed within the multiple case study. Fifth, the authors design a Fuzzy Assessment Framework (FAF) and a set of original thresholds and IF-THEN rules to elaborate the data collected in the fuzzy survey, thus determining the final outcome for the assessment of all sixteen R&C&Cs with reference to the five tests. As a sixth and concluding step, data from the case studies and from the FAF are further correlated to generate a set of strategic guidelines for resource management.

The work is structured as follows. The theoretical background is discussed in Section 2, while the methods leveraged in the research process are illustrated in detail in Section 3; Section 4 presents the study's results and discussion; and conclusions on the study's contribution, limitations and future research opportunities and drawn in Section 5.

## 2. Theory

This study grounds its original contribution on the following major literature streams: the strategic assessment and management of the resource-based view (RBV) and the dynamic capabilities approach (DCA).

Although these literature streams do not offer a well-established procedure to operationally assess the R&C&C status and manage the R&C&C portfolio, they contribute to forming the theoretical background our study aims at contributing to.

### 2.1. Resources, competencies and capabilities in strategy

The RBV and the DCA claim that the sources of competitive advantage ultimately come from the firm's endowment of internal core R&C&Cs. In this study, these theories provide a consistent definition for R&C&Cs, as well as a methodology for testing the resource core status.

According to the RBV, firms are a unique collection of tangible and intangible resources and competencies (Barney, 1991; Hamel and Prahalad, 1990). Several studies portray organizations as bundles of strategic resources which provide a distinct source of competitive heterogeneity (Barney, 1991; Camelo-Ordaz et al., 2003; Oliveira et al., 2002).

The DCA (Hamel and Välikangas, 2003; Teece et al., 1997) acts as an extension of the previous RBV model, which attempts to explain how firms can enjoy and sustain superior performance in a rapidly changing industry (Teece, 2007). Dynamic capabilities are those *strategic and organizational processes* – i.e. the way things are done in the firm, also referred to as routines or patterns of current practices and learning – shaped by *positions* – i.e. firm-specific endowment of RBV's resources and competencies – and *paths* – i.e. the strategic alternatives available to the firm, and the presence or absence of increasing returns and attendant path dependencies (Teece et al., 1997). A firm's competitive advantage rests fundamentally on processes, shaped by positions and paths.

<sup>3</sup> The “Five Core Tests” are those tests used to validate whether a resource, competence or capability is core, i.e., it contributes to the creation of competitive advantage.

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