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**The roles of performance measurement and management in
the development and implementation of business ecosystem
strategies**

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The roles of performance measurement and management in the development and implementation of business ecosystem strategies

ABSTRACT

Purpose: Performance measurement and management (PMM) systems have traditionally enabled strategy execution within and across firms. However, they have been criticised as overly static and deterministic and therefore inappropriate for emergent and dynamic contexts, such as those that characterise business ecosystems.

Design/methodology/approach: We carried out a qualitative, longitudinal study during 2016-2020 at a Japanese multinational technology corporation attempting to create an ecosystem strategy to expand its market and diversify its offering. We collected interview, observation, and archival data, spanning the period from framing the initial strategy to establishing the ecosystem.

Findings: The process of developing and implementing the ecosystem strategy was emergent and highly iterative, rather than planned and linear, eventually requiring key decision-makers in the company to challenge some of their deeply held assumptions. PMM practices first acted as barriers to ecosystem development, by promoting an excessive focus on revenue generation. Once modified, they helped capture, convey, and reassess the ecosystem strategy. Performance targets, indicators, and strategy maps were not just data gathering and reporting mechanisms, but key means to express competing perspectives.

Practical implications: When developing an ecosystem strategy, managers should adopt a participatory and iterative approach, reviewing the complementary effects of various PMM tools at different points in time.

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3 **Originality:** This study is among the first to provide an in-depth account of ecosystem
4 strategy creation and implementation, and to identify the diverse roles and effects of PMM
5 practices in dynamic and complex contexts.
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10 **Keywords:** Business ecosystems; Performance measurement; Ecosystem strategy.
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12 **Paper type:** Research paper.
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1. Introduction

In recent years, global firms such as General Electric and Siemens have actively cultivated business ecosystems to access a broad range of resources, become more flexible and resilient, and deliver increasingly complex products and services (GE Digital, 2021; Johnson *et al.*, 2021; Pidun *et al.*, 2019; Siemens, 2021). Such investments have been celebrated by academics and practitioners alike with reports highlighting that ecosystems enable firms to mitigate risks and to operate across different industries, as demonstrated by the well-known examples of Amazon, Alibaba and Uber, and hold considerable promise for improved value capture (Fuller *et al.*, 2019; Schroeck *et al.*, 2020).

Distinct from related concepts such as platforms, supply chains and extended enterprises, business ecosystems have been defined as “interacting organizations, enabled by modularity, not hierarchically managed, bound together by the nonredeployability of their collective investment elsewhere” (Jacobides *et al.*, 2018; p. 2255). In practice, business ecosystems are typically defined by a common value proposition, which means that they “cannot be reduced to a set of interorganizational alliances or to a network of organizations” (Shipilov and Gawer, 2020; p. 101). An ecosystem is inherently multilateral and, in contrast with other forms of networks, there is often considerable fluidity and misalignment among partners, i.e., “actors on whose participation the value proposition depends, regardless of whether or not they have direct links to the focal firm” (Adner, 2017; p. 43). In ecosystems, no firm has hierarchical control and no actor can fully determine what is supplied and at what cost (Jacobides *et al.*, 2018), but two distinct roles are typically identified: organizational actors are referred to as “orchestrator” or “keystone” firms when they act as a “hub” (Iansiti and Levien, 2004) or as “complementors” when they contribute to the value proposition, although not fulfilling the traditional role of suppliers (Shipilov and Gawer, 2020).

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3 Whether acting as orchestrators or complementors, organizations need to develop an
4
5 “ecosystem strategy” to bring together actors and activities necessary for a value proposition
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7 to materialize and, ultimately, to reap the benefits of business ecosystems (Adner, 2017;
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9 Talmar *et al.*, 2020). However, doing so entails conceiving of strategy in a different way from
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11 traditional corporate or business strategies. Since partners are often only loosely linked and
12
13 ecosystems emerge in relatively unpredictable ways (Dattée *et al.*, 2018), typical “plan-and-
14
15 execute” strategies are likely to be ineffective (Fuller *et al.*, 2019). Yet, intentionally creating
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17 and executing a strategy whilst allowing for flexibility and dynamism is not a simple task,
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19 and authors have explicitly criticised existing approaches as overly static and deterministic
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21 (Melnyk *et al.*, 2014; Bourne *et al.*, 2018). In particular, as the goals and composition of
22
23 ecosystems shift and change more frequently than in other contexts, such as supply networks,
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25 the crucial assumption that organizations can set and cascade performance measurement and
26
27 management (PMM) tools – such as objectives, targets, and key performance indicators
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29 (KPIs) - at the beginning of a business cycle is unlikely to hold (Constantiou and Kallinikos,
30
31 2015). Indeed, while PMM systems have long been identified as key mechanisms for strategy
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33 development and execution within and across organisations (Folan and Browne, 2005;
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35 Koufteros *et al.*, 2014; Micheli and Mura, 2017; Maestrini *et al.*, 2018; Pekkola and Ukko,
36
37 2016), existing approaches have been increasingly criticized as overly control-oriented and
38
39 inflexible, and therefore unsuitable for contexts characterized by dynamism and complexity
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41 such as ecosystems. While some authors have provided theoretical arguments in favour of
42
43 alternative approaches (Cardinal *et al.*, 2017; Bourne *et al.*, 2018), evidence over novel, more
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45 suitable practices is still limited.
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54 Drawing on research on business ecosystems and on PMM, this study aims to address
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56 the following research question: *What are the roles of organizational PMM practices in the*
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58 *development and implementation of business ecosystem strategies?*
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3 Empirically, we report the results of a qualitative study conducted in 2016-2020 at
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5 MNC Tech¹, a Japanese multinational technology firm, which operates in an industry that is
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7 being impacted by considerable technological change and whose products are at risk of
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9 becoming commodities. As a result, it set out to create an ecosystem to attract new business
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11 by enhancing service provision and, ultimately, by creating an integrated product and service
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13 offering. Formal data collection began as the firm was framing its initial ecosystem strategy
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15 and ended when the ecosystem started to be established.
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19 Through the analysis of interview, observation, and archival data, we identify three
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21 distinct but overlapping phases characterized by fundamental features that substantially
22
23 varied during the research period: managers' perspectives over the role the company should
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25 play in the ecosystem; the principal organizational goals associated with the ecosystem; and
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27 the main PMM practices being adopted and their effects. On the basis of the evidence
28
29 gathered, this study makes four main contributions to research on PMM and on business
30
31 ecosystems. First, contrary to what argued in the literature, we find that traditional PMM
32
33 practices are not necessarily unsuitable in complex environments (Bourne *et al.*, 2018).
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35 Indeed, the initial attempt to develop an ecosystem failed in part because of the lack of
36
37 performance indicators and targets. However, the top-down, financially oriented approach
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39 subsequently adopted by MNC Tech and the lack and of a more collaborative perspective
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41 (Busi and Bititci, 2006) ended up hindering the growth of the ecosystem, as it encouraged the
42
43 exploitation of current customers and partners. Only the final measurement system - designed
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45 mainly bottom up, consisting mainly of non-financial indicators, and relying on a strategy
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47 map developed in a participatory way - proved effective. Second, we show how performance
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49 targets and indicators are not just tools used to gather and report data, but they are crucial
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59 ¹ For confidentiality reasons, the names of the organization, its main business units and product categories have
60 been anonymized.

mechanisms to embody and express competing views held by different stakeholders.

Therefore, changes to PMM approaches are not simply technical issues, but require deeper shifts in organizational dynamics and perspectives. Third, our findings portray the process of creating the ecosystem strategy not as relatively linear and controlled by a single organization (Adner, 2017), but rather as contentious and iterative, and as eventually requiring key decision-makers in the company to challenge some of their most established assumptions and approaches. Fourth, the literature emphasizes the role of the orchestrator as the active creator of an ecosystem that asserts influence over the complementors (Talmar *et al.*, 2020). In the case of MNC Tech, even though the company decided to act as a complementor, it actively contributed to the development of a customer-centric value proposition and retained a certain level of control.

The paper is structured as follows. We first review the relevant literature on performance measurement and management and on business ecosystems. Subsequently, the methodology and organizational context are described. We then report the findings, identifying distinct phases in the creation and implementation of the company's ecosystem strategy. We conclude by articulating the main contributions to theory and practice.

2. Theoretical background

2.1 *The roles of PMM in strategy implementation*

Numerous studies in operations management have investigated the roles of PMM in the implementation of corporate strategies (e.g., Koufteros *et al.*, 2014). PMM systems have been found to positively impact the development, communication, and review of strategy (Franco-Santos *et al.*, 2012), to create a clear link between corporate and business strategies and operations (Bourne *et al.*, 2000), and to promote organizational alignment (Micheli and Manzoni, 2010). Moreover, authors have identified that the cascading of KPIs and

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3 performance targets is a primary way for top management to exert influence throughout the
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5 organization and to support communication between headquarters and subsidiaries (Micheli
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7 and Mura, 2017).
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10 Despite evidence of these positive effects, existing PMM practices have been
11
12 criticised as they tend to rest on assumptions of control and predictability, which require a
13
14 high degree of clarity and stability in business environments (Cardinal *et al.*, 2017). In their
15
16 analysis of the current dominant PMM paradigm, Bourne *et al.* (2018) argue that PMM
17
18 systems' capacity to foster alignment through centralisation and cascading of tools is
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20 increasingly unrealistic or even destructive in a world characterised by growing complexity,
21
22 volatility, and uncertainty (see also Alexander *et al.*, 2018; Melnyk *et al.*, 2014). Moreover,
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24 even though considerable work has been done on PMM in inter-organizational, collaborative
25
26 contexts (e.g., Lehtinen and Ahola, 2010; Maestrini *et al.*, 2018; Pekkola and Ukko, 2016;
27
28 Verdecho *et al.*, 2009), approaches tend to still be hierarchical and control-oriented. Also,
29
30 PMM research has been criticised as providing static and mechanistic guidance to managers,
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32 rather than a more contingent approach that takes into account multiple factors that
33
34 increasingly permeate business environments (Melnyk *et al.*, 2014). This has spurred calls for
35
36 novel PMM practices that are more flexible, emergent, and adaptable and not overly
37
38 monitoring oriented (Bourne *et al.*, 2018). At the same time, while too much control and
39
40 alignment may be neither achievable nor desirable, too little control may result in excessive
41
42 fragmentation and lack of standardization, leading to suboptimal customer value (Yoo *et al.*,
43
44 2012). Even though several authors have developed theoretical arguments for changes to
45
46 traditional PMM approaches so that an appropriate degree of control is ensured, we lack an
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48 empirically grounded understanding of the processes through which these approaches are
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50 developed, especially in novel contexts such as business ecosystems.
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2.2 Business ecosystems

Moore (1993) is credited with borrowing the term “ecosystem” from biology and using it in a business setting, subsequently defining it as the “intentional communities of economic actors whose individual business activities share in some large measure the fate of the whole community” (Moore, 2006; p. 33). Various authors have offered more specific definitions that emphasise different aspects but share some common features. First, there is substantial consensus that the value generated by an ecosystem is intrinsically linked to the partners that engage in it and the “focal offer” or “value proposition” provides not only a purpose for participation but also defines the ecosystem itself (Shipilov and Gawer, 2020). Second, ecosystems are “multilateral” in that they comprise “not only a multiplicity of partners, but also a set of relationships that are not decomposable to an aggregation of bilateral interactions” (Adner, 2017; p. 42). Third, ecosystems are not hierarchically controlled, as they include activities and actors over which the orchestrator, if there is one, “lacks the hierarchical controls of traditional firm groupings, quasi-captive systems such as Keiretsus or Chaebols, or supply networks” (Jacobides *et al.*, 2018; p. 2266). Fourth, ecosystems are enabled by modularity and bound together by the partners’ non-redeployability of their collective investments elsewhere (Jacobides *et al.*, 2018). Fifth, ecosystems are emergent - they cannot be created relying entirely on planned actions and objectives but entail dynamics and shifts that are difficult to anticipate - and influence based, as they are characterized by partial influence rather than full ownership or control by any of the involved partners (Fuller *et al.*, 2019; Johnson *et al.*, 2021).

Kapoor (2018) notes that an ecosystem is conceptually different from a supply chain as it is less vertically aligned and not necessarily related to the principal organization’s product or service. In other words, a company may still be able to release a product or service

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3 as a standalone offer but, within an ecosystem, the use of complements and adjacent offerings
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5 has the potential to deliver a wider array of services or products and thereby capture a greater
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7 proportion of economic value. Also, while ecosystems have often been discussed in relation
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9 with digital platforms, the two are distinct both conceptually and practically: while digital
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11 technology can facilitate the orchestration of multiple partners, it is not necessary for either
12
13 the creation or the survival of ecosystem (Fuller *et al.*, 2019).
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19 *2.3 Developing and implementing an ecosystem strategy*

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21 Despite the boom of interest in business ecosystems, research is said to be “still in the stage
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23 of formulating the basic definitions and drivers of ecosystem evolution” (Shipilov and
24
25 Gawer, 2020; p. 104) and authors have called for studies on how ecosystems are formed,
26
27 governed, and maintained (Dattée *et al.*, 2018; Jacobides *et al.*, 2018). These aspects are
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29 crucial because, while some popular cases such as those mentioned above are widely
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31 celebrated, a recent study of 57 ecosystems found that fewer than 15% of those analysed
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33 proved sustainable in the long run, with many of them failing “to get off the ground” (Reeves
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35 *et al.*, 2019).
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40 Although empirical evidence on ecosystems is fairly limited, scholars concur that a
41
42 fundamental aspect in business ecosystems is firms’ capacity to develop and implement an
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44 appropriate ecosystem strategy. However, the creation of such strategy cannot rely on
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46 traditional approaches to strategy-making and, instead, should start by the recognition of the
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48 limited power that any organization – even the orchestrator – can exert and by embracing the
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50 ambiguity and emergence of ecosystems. Indeed, Fuller and colleagues (2019) have urged
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52 managers to shift from a traditional, static, company-centric perspective, and redesign
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54 internal processes to become more flexible and responsive. Such practices should enable
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56 firms to exert “dynamic control” over the value creation process. Nonetheless, little is known
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3 about how this can be done in practice and most studies have focused on situations where an
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5 ecosystem was already established or at least where a clear value proposition was already in
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7 place (Dattée *et al.*, 2018).
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12 In sum, the operations management literature acknowledges the positive contribution of
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14 PMM in connecting strategy with operations and in fostering organizational alignment within
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16 and across firms. However, it also questions the appropriateness of existing PMM practices in
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18 increasingly dynamic and complex contexts such as ecosystems. Research on business
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20 ecosystems emphasizes the need for organisations to develop and implement ecosystem
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22 strategies. Yet, it provides limited insight on how to do so and on how firms should change
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24 their internal processes and practices to effectively lead or contribute to the formation and
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26 functioning of an ecosystem.
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33 **3. Methods**

34 *3.1 Research design*

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36 This study explores the roles of PMM practices in the creation and implementation of
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38 business ecosystem strategies. We opted for a qualitative, inductive approach, which is
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40 appropriate for understanding phenomena that are not well explained by existing research
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42 (Edmondson and McManus, 2007). Specifically, we chose a longitudinal, single-case
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44 research design, as this would enable us to investigate the complex phenomenon of
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46 ecosystem strategy development (Dattée *et al.*, 2018).
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52 The chosen site had to enable us to analyze the creation of the ecosystem strategy
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54 from the very beginning (e.g., recognising the development of a business ecosystem as a
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56 priority) to the moment in which the ecosystem would start to grow. Also, to really appreciate
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58 the dynamics involved in this process, access to multiple data sources was required, as
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3 triangulation was necessary to develop a nuanced explanation of the focal phenomena
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5 (Eisenhardt, 1989).
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10 3.2 Case study selection

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12 The selected case firm is MNC Tech, a multinational technology corporation headquartered
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14 in Japan. This company operates as a federated organization, split in three main geographical
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16 regions (United States, European Union, and Asia-Pacific). Its main customers are small and
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18 medium-sized enterprises (SME) and most of its revenues are derived from two categories of
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20 products. During 2016-2020 we were able to closely investigate MNC Tech's development of
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22 its ecosystem strategy from the very beginning, when the top management team first
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24 identified the creation of an ecosystem as a corporate objective, to the moment in which a
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26 clear strategy was finally agreed and the ecosystem began taking shape. This longitudinal
27
28 research design enabled us to capture the evolution of the thinking within the company
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30 regarding its ecosystem strategy development with a particular focus on the role of PMM
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32 practices as either enablers or barriers. We selected MNC Tech as a "revelatory" case
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34 (Eisenhardt and Graebner, 2007) since, similar to many established firms (Pidun *et al.*, 2019),
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36 MNC Tech regarded the ecosystem as a key means to access further capabilities, expand its
37
38 offering by coupling products with services, and generate new revenue. Moreover, the
39
40 company relied on a top-down approach to strategy execution enabled by financial targets
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42 and indicators set at corporate level, which is typical of large, established firms (Bourne *et*
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44 *al.*, 2018).
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54 3.3 Data collection and analysis

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56 Data were collected in three main phases. The fieldwork started in early 2016 when the
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58 company identified the need to develop a business ecosystem. While MNC Tech had usually
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3 been quite successful financially, from 2014 its operating profit started to steadily decrease as
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5 the sales of existing products were declining. The senior management team realised that
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7 MNC Tech not only had to enhance the value of its products to existing clients, but it also
8
9 had to expand its market and diversify its offering. In 2016, alongside the creation a new
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11 platform-oriented product and the acquisition of some SMEs, the development of a business
12
13 ecosystem was identified as a key means to do so. The theoretical focus on the role of PMM
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15 in the creation of an ecosystem strategy emerged at that time, as we identified a clear interest
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17 from the company leadership in developing an ecosystem; at the same time, we recognized
18
19 that some PMM practices could either hinder or facilitate this task. At this stage, data
20
21 collection entailed informal communication with the company and gathering of documents,
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23 including the corporate strategic plan, business plan and performance report.
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29 The second phase of data collection started in early 2018. At that point, the initial
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31 attempt to create a business ecosystem had proven unsuccessful (see Findings). However,
32
33 there was a renewed interest in the company and a business unit called Digital Workplace
34
35 (DW) was explicitly established to develop a business ecosystem that, in turn, would directly
36
37 contribute to the organization's objectives of expanding its market offer and generating new
38
39 revenue. Working as a global team, this business unit was geographically distributed with
40
41 product development functions in Europe, go to market and commercialization in the US, and
42
43 strategy and planning in Japan. In this period, several relevant internal and external
44
45 documents were gathered (e.g., company and DW strategic plans and business plans,
46
47 performance reports) and interviews were carried out with four key individuals working in
48
49 DW: General Manager, global Go-to-market Manager, General Manager for marketing, and a
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51 Senior Director for business development. These interviews lasted an hour on average and
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53 covered key aspects of DW's aims, strategy and operations, focusing specifically on the
54
55 creation and implementation of objectives, performance indicators and targets. These and the
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2
3 following interviews were all conducted in English and were recorded and transcribed to
4
5 ensure data accuracy and retention (Voss *et al.*, 2002).
6

7
8 The third phase took place in 2019-2020, as the ecosystem strategy was being fully
9
10 developed and DW was growing. In this period, further data were collected: 15 interviews
11
12 (lasting between 45 and 120 minutes) were carried out, involving relevant individuals at top
13
14 and middle management levels as well as in operational roles (see Table 1). Interviewees
15
16 were selected based on their involvement in the company's business ecosystem and represent
17
18 a broad selection of roles within the DW unit as well as stakeholders from the regional
19
20 headquarters who were responsible for regional ecosystem capabilities. In addition, three
21
22 stakeholders from two external firms were also interviewed. The use of semi-structured
23
24 interviews was especially important to access individuals' understandings and views over the
25
26 company's approach towards the development of the business ecosystem and over the roles
27
28 of PMM practices (Eisenhardt and Graebner, 2007).
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34 Insert Table 1 about here
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39 The first part of the interview explored issues related to the creation and aims of the
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41 ecosystem, the development of the value proposition, ecosystem governance, scale and
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43 position in the firm. Aspects concerning its desirability (i.e., whether key stakeholders
44
45 wanted it), feasibility (i.e., whether the company could create an ecosystem), and viability
46
47 (i.e., whether the company should invest in developing an ecosystem) were also discussed
48
49 (Brown, 2009). Particular attention was paid to exploring the organization's structure,
50
51 strategies and plans, and how these were cascaded to the various units, most notably DW.
52
53

54 The second part of the interview focused on several PMM practices and their appropriateness
55
56 and effects on the (re-)formulation and execution of the ecosystem strategy. Several meetings
57
58 were also observed, and various documents collected and analysed, including the company's
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3 corporate annual statement, DW's midterm plan, DW's Balanced Scorecard and Strategy
4
5 Maps, and DW's ecosystem strategy and midterm plan. The use of multiple data collection
6
7 sources – semi-structured interviews, observations of meetings, and documentary analysis –
8
9 enhanced the validity of findings (Voss *et al.*, 2002).
10
11

12 All authors worked collaboratively on data analysis, adopting established analytical
13
14 techniques to move from raw data to theoretical interpretations by iterating between data
15
16 collection, analysis, and existing literature (Gehman *et al.*, 2018). The first analytic stage
17
18 focused on the data gathered in 2016-2018, as we inductively analyzed the documents
19
20 gathered by identifying key aspects in strategy development and implementation, and PMM
21
22 practices. As explained below, several inconsistencies in MNC Tech's approach emerged
23
24 during this phase and these led to the initial failed attempt by the firm to develop a coherent
25
26 and actionable ecosystem strategy. In this period, our focus was predominantly on the tools,
27
28 and actionable ecosystem strategy. In this period, our focus was predominantly on the tools,
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30 such as strategic objectives, KPIs and performance targets, and the alignment or
31
32 inconsistencies among them.
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35 The subsequent analytic stages drew on interview, observational, and archival data. In
36
37 2018, as we closely followed the development of MNC Tech's new approach, and
38
39 specifically the creation of the new business unit, DW, we concentrated not only on the tools
40
41 being deployed, but also on the diversity of views that became quite apparent almost from the
42
43 start over the development and implementation of MNC Tech's ecosystem strategy. Such
44
45 diversity depended on job roles (e.g., managers at the headquarters vs. DW staff), but it was
46
47 clear that the dominant perspective in the company evolved over this period and, even more
48
49 so, during the subsequent one (2019-2020). This was also evident in the various documents
50
51 we analysed and in the different PMM tools used.
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55
56 In late 2020, we engaged in open and then axial coding (Corbin and Strauss, 1990) of
57
58 the full set of data gathered in 2018-2020 to more systematically identify different phases in
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1
2
3 the company's approach, and related key attributes (see Findings). While our analysis was
4
5 mainly inductive, we continued to consult the literature on business ecosystems and PMM to
6
7 ensure our emergent concepts and understandings were grounded in relevant studies while
8
9 also identifying areas where our findings challenged and/or moved beyond existing research
10
11 (Corbin and Strauss, 1990). For example, key concepts such as "orchestrator" and
12
13 "complementor" were drawn from the literature (Jacobides *et al.*, 2018); however, we also
14
15 realized that the role MNC Tech eventually chose to play in the ecosystem had not been
16
17 really discussed in previous studies and therefore we named it "active complementor" (see
18
19 Findings and Discussion). Also, we paid particular attention to organizational dynamics
20
21 related to the development and use of PMM tools (e.g., Strategy maps, Balanced Scorecards),
22
23 rather than on the tools themselves, as the process of ecosystem strategy development at
24
25 MNC Tech appeared considerably more controversial than portrayed in the literature (see,
26
27 e.g., Talmar *et al.*, 2020). Finally, throughout the study, we returned to the field several times
28
29 to discuss our emerging insights with organizational members. These conversations helped to
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31 enhance the authenticity and quality of results.
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40 **4. Findings**

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42 MNC Tech's approach to ecosystem strategy development and implementation changed
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44 substantially during the period of the study. The initial attempt undertaken in 2016-2017
45
46 proved ineffective – this is discussed below as "phase 0". 2018-2020 was characterized by
47
48 various shifts in both corporate objectives and internal perspectives. Through the analysis of
49
50 data, we found that three key attributes of the interviewees' perspectives on how MNC
51
52 Tech's ecosystem strategy should be developed and implemented markedly varied in that
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54 period: the dominant view over which role the company should play in the ecosystem; the
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56 principal goals associated with the ecosystem; and the main PMM practices. Further re-
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3 elaboration of the data enabled us to identify connections between these attributes as well as
4
5 three fairly distinct stages - referred to as phases 1-3 below - in the development of MNC
6
7 Tech's ecosystem strategy. Similar to Rajala *et al.* (2019), we created a temporal
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9 representation of key events and practices (Figure 1) which report relevant information in
10
11 relation to: PMM frameworks used (e.g., Balanced Scorecard, Strategy maps); main KPIs
12
13 related to the ecosystem; what the senior management team regarded as the ecosystem
14
15 addressable market; and the main activities related to the ecosystem (e.g., business model
16
17 design, market testing). The distinctive attributes of the phases 1-3 are summarized in Table 2
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19 and discussed in depth in the following sections.
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26 Insert Figure 1 and Table 2 about here
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30 31 *4.1 Phase 0: Initial attempt to develop a business ecosystem*

32 In 2016, MNC Tech's senior management team identified the creation of a business
33
34 ecosystem as a corporate priority. This goal was reinforced in 2017 when a new corporate
35
36 strategy, consisting of three strategic "pillars" - core business, growth opportunities, and new
37
38 business – was launched, with the ecosystem described as a means to support the latter two.
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41 While leadership support was there, the lack of clear PMM practices stifled this initial
42
43 attempt to create a business ecosystem. In particular, MNC Tech had traditionally adopted a
44
45 financial control approach to strategy implementation (Goold and Campbell, 1988) whereby
46
47 the three regional headquarters (RHQ) would negotiate hardware unit sales and revenue
48
49 targets with the corporate centre and then distribute the targets to the national operating
50
51 companies that had the sales and service capabilities. Tight financial controls would be
52
53 ensured from the centre, but the regional headquarters and national operating companies
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55 would be given a certain degree of autonomy in how to meet the targets.
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3 While this approach had been effective in the past, the use of financial targets made
4
5 less sense in relation to a new and much less predictable endeavor, such as the creation of a
6
7 business ecosystem. Indeed, no specific target was set at this stage, nor was any other PMM
8
9 instrument deployed, and this created considerable ambiguity inside the firm. Another tool,
10
11 which could be used to implement strategy, was the Vision, Strategy and Execution (VSE)
12
13 document that articulated the rationale for the main corporate goals. Although approximately
14
15 80% of MNC Tech's total revenues were generated outside of its domestic market, the VSE
16
17 was traditionally developed by a strategy team based at the headquarters in Japan. As one of
18
19 our interviewees in the second phase of data collection critically stated: "The VSE is not so
20
21 open, and you may not get [the involvement of other stakeholders such as the regional HQs].
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23 It starts from corporate, then is broken down to each business unit ... I don't think we have
24
25 one in English" (DW general manager).
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31 During 2016-2017, the lack of clarity over vision, strategic goals, and expectations led
32
33 to very limited action towards the creation of an ecosystem, with the RHQs – especially EU
34
35 and US – having different expectations over the rationale, goals, and the firm's capacity to
36
37 develop the ecosystem. Indeed, the documents gathered at this stage and the initial contact
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39 made with the company revealed that very different views were being expressed in relation to
40
41 crucial aspects such as how to create the ecosystem, which partners to involve, what
42
43 customers to target and with what types of products and services.
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49 *4.2 Phase 1*

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51 *4.2.1 Role of the firm.* In early 2018, a new effort was made to develop a business ecosystem.
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53 At the time, MNC Tech already had regional developer support programmes (DSP) whose
54
55 objective was to support external firms whose services complemented the company's main
56
57 product lines. The service provided by existing partners focused on embedded solutions, or at
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3 least solutions that interacted with the input / output of the hardware products, e.g., document
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5 management solutions or connectors to third party applications. As these programmes
6
7 specifically focused on MNC Tech's core business, and the company had a considerable
8
9 share of the markets in which it operated, MNC Tech acted as the orchestrator by controlling
10
11 access to membership, technical documentation, and access to the firm's hardware products
12
13 on customer sites. From a PMM point of view, the success of the DSPs was measured
14
15 primarily in terms of hardware unit sales volume. Having identified the development of a
16
17 new business ecosystem as a priority, discussions within the company began over how to
18
19 approach this. The dominant view was that, also in this instance, the firm would play the role
20
21 of the orchestrator. This choice was based on market share considerations, but also on the
22
23 belief that the company had to retain control over valuable assets and position to ensure
24
25 competitive advantage. The Portfolio Extension Manager stated:

26
27 "Our biggest asset is in who we are, being a hardware manufacturer gives us control of the edge and
28
29 the cyber physical strategy... [It] can give a considerable advantage on edge devices along with app
30
31 solutions [...] Our unique access to the SME market makes us attractive for large players. Our direct
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33 connection to the SME market could be lucrative to them as they have to go via system integrators or
34
35 resellers."

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38 *4.2.2 Business ecosystem strategy.* Despite the agreement over the company's role, two
39
40 competing views began to emerge in relation to how to create and execute the business
41
42 ecosystem strategy. According to managers at the regional HQs, hardware R&D managers,
43
44 and the Portfolio Extension Manager, this strategy had to be founded on the company's
45
46 capacity to develop and manufacture products. While describing such viewpoint, the
47
48 Portfolio Extension Manager stated, "our key strengths are mechanical engineering, imaging,
49
50 optics and material science, which are not easy for others to replicate, as they require a lot of
51
52 R&D investment." With the increase of sales of hardware as the main aim not only of the
53
54 existing DSPs but also of the new ecosystem, DW's work was essentially regarded as a
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3 means to enhance the value of the company's device technology products by allowing
4
5 complementary partner services for MNC Tech's SME customers.
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8 On the contrary, the Strategy Director stressed the importance to "shift the focus of
9
10 the customer value proposition away from hardware to the ecosystem, allowing customers to
11
12 select business applications for their specific business needs", a view shared with the New
13
14 Product Management Manager and the Ecosystem Manager. Discussing this perspective on
15
16 the business ecosystem strategy, the New Product Management Manager emphasized the
17
18 importance of partners: "this is a product company that is looking to transform into an IT
19
20 company, but it needs support to achieve the goal. We need to focus on customer needs [as
21
22 they] can drive product development." This more customer centric position challenged the
23
24 traditional one within the company which emphasized concentrating on the company's
25
26 current products and capabilities.
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31 Within this phase, another tension emerged on how open or closed the ecosystem
32
33 should be. The dominant view at MNC Tech was one of a firm that creates and owns
34
35 intellectual property – with the number of patents registered as a corporate KPI. Having
36
37 developed closed partnering capabilities with varying degrees within the RHQs, the
38
39 established logic was that a closed ecosystem would be better as it would allow retaining
40
41 intellectual property and control. However, this model was opposed by DW managers as they
42
43 felt that it could limit the value offered to customers and that customer demand should dictate
44
45 the composition of the network. Indeed, limiting the partner network, and therefore the
46
47 services that would be available to customers, was viewed as reducing the value of the
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49 ecosystem.
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54 Competing viewpoints on the openness of the ecosystem were not just evident
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56 between the HQ and the RHQs, but also among RHQs with different strategies adopted in the
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58 EU and in the US. This was partly because the EU DSP programme was more open to
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3 accepting partners than the US DSP programme as the latter had an in-house software
4
5 development team that was tasked with creating customer applications. Also, cultural
6
7 resistance emerged during various meetings that we observed where longstanding employees
8
9 argued that the company should not aim to create an open ecosystem, because this would lead
10
11 to the loss of intellectual property. The European DSP Partner Relationship Manager
12
13 commented:
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17 While our business objective is to support the [product name] sales, and not to make revenue, our US
18 counterparts see it as a profit centre. It's hard for them not to block any competing app as there could
19 often be a conflict of interest. I would say that's not a perfect breeding ground for innovation. Hence
20 [in Europe] we chose to be more open than in the US.
21
22

23 *4.2.3 Performance measurement and management practices.* Notwithstanding differences in
24
25 views over the purpose and aims of the ecosystem, there was consensus at senior
26
27 management level within the company that the performance of the ecosystem should be
28
29 measured in relation to its contribution to the unit sales of the new platform product. That is,
30
31 the addressable market for the ecosystem was determined on the basis of the unit sale forecast
32
33 (see Figure 1). However, as in the case of the existing regional partner programmes (DSP),
34
35 no direct revenue targets for the ecosystem were agreed. At the same time, when presenting
36
37 an update to senior managers at the company HQ, managers responsible for the DSPs
38
39 questioned the lack of detail over the number and type of partners and the service portfolio
40
41 that needed to be created. The senior management team accepted these challenges and
42
43 recognized the need to design appropriate PMM practices in relation to the ecosystem.
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50 *4.3 Phase 2*

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52 *4.3.1. Role of the firm.* Following considerable debate at both global and regional
53
54 headquarters, it became apparent that the company could orchestrate the creation of small,
55
56 niche business ecosystems in the provision of “vertical” offerings, i.e., specific for certain
57
58 sectors such as healthcare and manufacturing. However, while being proactive in the creation
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1
2
3 of a wider ecosystem, it was felt that the company was not in a position to operate as an
4
5 orchestrator in the provision of “horizontal” offerings, i.e., across a variety of sectors².
6

7
8 According to most interviewees at DW, this was due to resource constraints: “we
9
10 should not take an orchestrator position because we do not have the financial capability to
11
12 build a business ecosystem” (DW Alliance Manager). Others highlighted that MNC Tech
13
14 lacked the necessary management mindset, capabilities, and alliances. The DW general
15
16 manager emphasized, “we need to shift investment ... to focus on integration and partner
17
18 management.” At the same time, this shift could not be performed by the company on its
19
20 own; he continued: “our strength does not lie in software development and with [Product X]
21
22 or other platforms; our focus should be to minimise development and leverage partners for
23
24 applications and features.” Several interviewees also questioned the company’s capacity to
25
26 build the appropriate type of alliances. For example, the DW Alliance Manager stated:
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31 When you look at the partners for [Product X], the contracts are not designed to collectively grow the
32
33 market, but instead are typical supply chain orientated – they are based on a set number of unit
34
35 commitment. We do have joint marketing events, but our partners do not help generate leads even
36
37 though their products are incorporated into our product, and the more we sell the more we all get in
38
39 return.

40
41 Such a lack of internal capability to develop the ecosystem led various senior individuals to
42
43 consider the creation of new roles to “manage alliances and wider stakeholders” (Head of
44
45 business architecture). Moreover, the size of the ecosystem was estimated to be much larger
46
47 with MNC Tech acting as a complementor rather than as an orchestrator. Nonetheless, the
48
49 decision to act predominantly as a complementor did not mean that MNC Tech should play a
50
51 passive role. The Strategy director emphasised:

52
53 While playing a complementary role in a large ecosystem such as those of [first company name] or
54
55 [second company name], our role should be of value addition more than just packaging or reselling.
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57 We should identify common interest and stitch products to build a cohesive solution while keeping
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59 focus on the target customers.

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² Since this was the main goal - revenues from horizontal services were forecast to be much higher than from vertical services - in this article we concentrate on the creation of this business ecosystem.

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3 4.3.2. *Business ecosystem strategy.* Over time, consensus started to build amongst key
4
5 decision-makers within the company around a value proposition not so tightly related to the
6
7 sales of hardware devices, as it had been traditionally, but more focused on the expansion of
8
9 MNC Tech's portfolio of business applications to offer greater choice to its customers. This
10
11 was not a given: several internal documents we analysed, for example, still referred to the
12
13 ecosystem strategy as ultimately aiming to increase the sales of the company's current
14
15 products. However, during this phase most interviewees recognised the need to shift from a
16
17 product-centric to a customer-centric logic. For example, the New Product Management
18
19 Manager argued:
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24 I would like to start from a customer perspective. Behind the customer there are a number of other
25
26 providers that also support the customer's business and we should work with those partners. [As] we
27
28 are moving from very product centric to service orientated and from hardware to other IT domains and
29
30 we cannot do these things ourselves... [MNC Tech's main product category] is an asset, but we should
31
32 not limit ourselves to this domain. That is why we need partners to help deliver what customers need.

33
34 Some respondents highlighted the challenges and opportunities that this move would entail.

35
36 For example, the Strategy director stated:

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38 Even though we have IP, [the current main] products are a commodity and are being substituted
39
40 resulting in [product name] decline. Therefore, the ecosystem should be around services. We have a
41
42 direct channel, and this can be leveraged compared to competition who sell via indirect channels.

43
44 Discussing the challenge of marrying the company's strengths and heritage with emerging
45
46 customer demands and needs, the Head of Business Innovation Strategy asserted:

47
48 The essence of the business is centred around [hardware and IT services]. So, the question is: what new
49
50 value can we bring by creating new e-products? One thing we are missing is customer centricity. Our
51
52 existing customers don't trust us much beyond our core capabilities.

53
54 With the change in perspective towards a more customer and service-oriented
55
56 approach to ecosystem development, there was also a recognition of the need to identify the
57
58 degree of openness that would be acceptable to senior managers and other stakeholders. In
59
60 total, 14 out of the 15 individuals interviewed supported a more open approach; as noted by
61
62 the GTM VP: "the ecosystem can help in how we put portfolio and services by tapping into
63
64 enormous number of application developers in horizontal, vertical, security and beyond."

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3 Further debate on the openness of the ecosystem stemmed from the specific financial target
4 set for the ecosystem. As described below, the introduction of a financial target led the DW
5 management team to re-evaluate the number of partners, the services that they would bring to
6 MNC Tech's customers, and how the revenue could be generated as well as the level of value
7 appropriation between partners and MNC Tech.
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17 *4.3.3 Performance measurement and management practices.* While the need to create a
18 business ecosystem was undisputed within the company and the shift from a product- to a
19 customer-centric logic was underway, it was unclear which PMM tools should be used to
20 support the implementation of the ecosystem strategy and to measure the success of the DW
21 business unit. Ambiguity over the role of DW and of the ecosystem was both reflected in and
22 exacerbated by the PMM practices adopted. A very high revenue target was attached to the
23 development of the ecosystem and DW was effectively put in charge of achieving it (see
24 Figure 1). However, this triggered considerable resistance, as DW managers believed that
25 attempting to do so would focus the unit's attention on identifying ways to charge customers
26 and partners as much as possible from the start, rather having low barriers to participation
27 and growing the ecosystem. The growth of the ecosystem was viewed as an important goal in
28 itself, because having more partners and services available to customers was perceived as
29 enhancing the attractiveness of the value proposition.
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47 In response, the company headquarters demonstrated some flexibility to adjust the
48 revenue target and repeatedly asked for information on the potential market size. While DW
49 managers struggled to provide a specific figure, they clearly communicated that, if the
50 ecosystem was supposed to only support the sales of Product X, revenue estimates were
51 rather low, especially as the product forecasts had been downgraded. This response triggered
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3 further conversations at the global headquarters regarding potential ways to address a wider
4 market by considering the entire customer base and not just that for product X.
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8 Towards the end of this phase, however, the Ecosystem business manager, following
9 considerable negotiation with the finance department, succeeded in removing the revenue
10 target by positioning the ecosystem development still in a developmental stage. He argued:
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14
15 [MNC Tech] is very revenue driven and the key [indicators for the whole company] are revenue and
16 business contribution profit. So, [for DW] the finance teams expect[ed] an ROI of \$X m based on the
17 investment requested [of \$Y m]. It's a simple 5:1 ratio. Although the [internal] documentation showed
18 how this can be achieved, based on platform access membership, consumption, and revenue share with
19 [partners] for apps sold, in reality it is not possible to say with any level of confidence.

20
21 Similarly, it was decided not to include indicators and targets related to intellectual property,
22 such as number of patents, despite these being widely adopted across the firm.
23

24
25 During this phase, the DW management team developed an initial Strategy Map, a
26 tool commonly used to articulate causal relationships between the main four Balanced
27 Scorecard dimensions: financial, customer, internal processes, and learning and growth
28 (Kaplan and Norton, 2004). This exposed gaps in the reasoning as links between process,
29 customer and financial dimensions had not been sufficiently explored (Figure 2). The
30 development of the Strategy Map also allowed the management team to specify or even
31 introduce objectives that, up to that point, had not been sufficiently developed or emphasised.
32
33 Importantly, it was decided to include “create a platform for our business partners”
34 (represented as a dotted bubble in Figure 2) to indicate the need for a digital platform and a
35 joined-up proposition that linked business partners for connected products. Indeed, several
36 interviewees argued that the lack of a suitable technology platform, which could provide the
37 necessary access to resources for partners to develop and integrate their application services
38 and thereby reduce transaction costs, was hindering MNC Tech’s capacity to increase the
39 number of partners.
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57 Moreover, several issues were raised in relation to the performance indicators being
58 used at the time (included in the rectangles in Figure 2), since five out of six were effectively
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3 financial, despite being in good part associated with objectives in the customer and internal
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5 process perspectives. The DW general manager said:

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7 The [main] target is revenue, but I don't think that this is enough. New KPIs [should] focus on re-
8 occurring revenue as it shows we are moving to services rather than just one-time sales. But other
9 indicators may be number of partners, number of apps ... we need something else.

10
11 The Strategy Map also showed that aspects normally included in the "Learning & Growth"
12 perspective, such as human capital, were either absent or underdeveloped. This was a crucial
13 issue for the DW team who did not feel sufficiently supported by the wider firm. As the
14 Alliance Manager stated, "human capital required for partnering ... is lacking for us to play
15 in this field - we struggle to get the resource internally to support engagement with partners
16 because of internal commitments."
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27 Insert Figure 2 about here
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30 4.4 Phase 3

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32 4.4.1 *Role of the firm.* At this stage, there was clear consensus amongst key decision-makers
33 inside the organization that MNC Tech would predominantly play an active complementor
34 role in the ecosystem. This decision over the role of the firm was supported by data on
35 market size. As the VP Go-to-market stated:
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41 The foundation of [the new] strategy is drafted on solving customers' needs, but the question is: how?
42 Honestly, we [at DW] will not be able to single-handedly solve the problems of our customer base to
43 replicate \$6 bn [revenue] and the [existing] business. We need to play big and make big friends which
44 explains our relationship with [names of four companies] and to be a part of a big ecosystem.
45
46

47 This also echoed a wider concern over the company's capacity to articulate a compelling
48 proposition for new partners to join the ecosystem. This was partly due to the previously
49 mentioned disconnection between the company's existing DSPs, located in the RHQs, and
50 the local sales organization (see also below).
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3 4.4.2 *Business ecosystem strategy*. Ever since the company had decided to develop a business
4
5 ecosystem strategy, the degree of ecosystem openness had been a contentious point. At this
6
7 stage, the most common view was that MNC Tech would guarantee the “lowest barrier to
8
9 entry for partners to add value” (Head of Business Architecture). Nonetheless, this conflicted
10
11 with its typical approach of “protect[ing] our IP ensuring that the company retains as much
12
13 value creation” (US DSP Manager). As the Portfolio Extension Manager stated:
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16
17 One of the biggest issues we have is that the innovation process is not working. We have an in-house
18
19 culture and co-creation partnerships have been difficult to establish. The partnership team are not fit for
20
21 purpose, but also the leadership does not understand co-innovation and joint development of IP. The
22
23 work [conducted years before] with [company name] is an example which failed.

24
25 The European DSP Partner Relationship Manager commented, “scrutiny of partner
26
27 applications is important to avoid competition to have access to our technical artefacts. For
28
29 me, the number of partners in the ecosystem is not important; it’s more about quality over
30
31 quantity”, which suggested the desire for a more curated partner network. However, as the
32
33 Strategy Director argued, “partner engagement is a missing area ... because currently the
34
35 Developer Support Programmes are cost centres and there is no connection to sales or
36
37 service.”

38
39 These views over lack of internal capability were supported by a corporate document
40
41 we gained access to which described the onboarding experience for partners as “painful” and
42
43 the existing partner community as “dormant.” The tension between resource constraints and
44
45 the desire to increase the openness of the ecosystems resulted in a situation where the
46
47 Ecosystem Manager accepted to set a target of a five-fold increase in the number of partners
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49 over 3 years but claimed that this could only be achieved by addressing the gap in the
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51 company’s capacity to attract and manage partners.
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58 4.4.3 *Performance measurement and management practices*. As DW began to grow, existing
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60 PMM practices were increasingly questioned, as it was felt that they could hinder rather than

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3 facilitate the development of the business ecosystem. For example, several interviewees
4
5 expressed dissatisfaction about the lack of an explicit set of objectives in different sections of
6
7 the Strategy Map in relation to attracting new partners: “Partner engagement is missing, and
8
9 this is important because without this we [will not be able to create] applications that
10
11 complement our products and [provide] what customers want” (US DSP Partner Relationship
12
13 Manager). Moreover, although DSPs were supposed to enhance sales volumes by attracting
14
15 partners that could complement MNC Tech’s existing products, they had no visibility of
16
17 performance information related to which partner apps were sold to whom and in what
18
19 quantities, and of the associated revenue. The DW general manager lamented:
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24 We have too much separation between each side of the ecosystem - customers and [partners]. At the
25
26 moment, the overall business model is that regions are only selling hardware and other functions, like
27
28 partnering, are managed at HQ. So, right now, if we need to connect partners and customers, then we
29
30 need to shift from a centralized Japan [structure] to enabling the regions: for in year returns, the regions
31
32 are willing to invest; if more long term, then they are not interested.

33
34 Although the performance indicators allocated to DW had several shortcomings, its managers
35
36 were cognizant that performance data had to be collected and communicated to the company
37
38 headquarters to demonstrate progress. Therefore, two non-financial indicators were
39
40 introduced: number of partners to applications provided, and device per application ratio (see
41
42 Figure 1). However, while useful, as they directly related to the company’s attempt to grow
43
44 the ecosystem, neither of these indicators was customer related and this was perceived as a
45
46 further problem. Indeed, lack of customer focus was a recurring issue in the company and this
47
48 had been exacerbated by the ubiquitous use of hardware unit sales targets.

49
50 Greater consideration of non-financial aspects was eventually given by the global
51
52 headquarters. This was facilitated by the creation of a roadmap that indicated when financial
53
54 returns could be expected. This also meant that resource allocation would “shift from
55
56 hardware development ... to application services, hence the organization will put more
57
58 resources on integrating software on [product name 1] and certifying applications on [product
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3 name 2]” (DW general manager). For the business ecosystem, a positive return on investment
4
5 was expected to be achieved only from 2023.
6

7
8 Having established the importance of implementing alternative performance
9
10 indicators, DW managers argued that a more comprehensive perspective, linking resources,
11
12 process and results, was needed and that this required the introduction of a Balanced
13
14 Scorecard (BSC): “From an ecosystem perspective ... a BSC is needed because many people
15
16 in the company have a tendency to think that, if we have a good product or hardware, we can
17
18 [automatically] make money” (DW general manager). In practice, objectives and KPIs were
19
20 designed and subsequently submitted to the company-wide strategic plan, although only the
21
22 DW financial indicators were eventually included. However, the set of KPIs within DW
23
24 included number of partner companies, number of available product APIs (Application
25
26 Programming Interfaces), number of applications made available by the partners for the
27
28 firm’s customers, and number of users. The intention was to introduce further indicators that
29
30 would also enable the assessment of the quality of partners and applications. In conjunction
31
32 with the development of the BSC, a more sophisticated Strategy Map was created for the DW
33
34 business unit; an initial map, dedicated to the ecosystem business, was presented at the global
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36 DW planning meeting in December 2019 and then refined over the following months (Figure
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38 3).
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46 Insert Figure 3 about here
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49 In 2020, further progress was made in both the development and the implementation of the
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51 business ecosystem strategy. First of all, the senior management team recognised that, within
52
53 all regions, the existing development support programmes had been reactive in terms of
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55 partner engagement, with neither active marketing nor a proactive drive to increase the
56
57 quality and quantity of partnerships. Essentially, partners had not been managed as strategic
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3 stakeholders. The revised ecosystem strategy to be implemented by DW detailed the creation
4
5 of new teams for marketing and account management to improve lead generation, conversion
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7 and retention of external partners.
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10 Secondly, from a PMM point of view, the company-wide VSE was superseded as the
11
12 main framework for DW in favour of a Balanced Scorecard, and the centralised approach to
13
14 defining and cascading KPIs and targets was replaced by a much more localised one. This
15
16 enabled the introduction of further non-financial indicators by DW, which supported the shift
17
18 of strategic focus and underlying logic from the pursuit of the company's financial targets to
19
20 enabling both the company and its partners to succeed. However, this proved not to be a
21
22 smooth transition: even towards the end of the data collection period, several senior
23
24 executives in the company still believed that "the [new ecosystem] should be built
25
26 on...charging partners for their consumption" (European CTO – meeting observation on 24th
27
28 June 2020). However, this perspective was opposed by DW managers on the basis that
29
30 customer volumes were still too low. Eventually, the number of partners in the ecosystem and
31
32 the number of partner applications sold to MNC Tech's customers were introduced as KPIs
33
34 alongside average revenue per user (Figure 1).
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40 Subsequently, the growth of the business ecosystem – which by mid-2020 had
41
42 engaged four partners and ten customer companies - was officially identified as the second
43
44 priority for the company overall. Accordingly, DW decided to increase both the ecosystem
45
46 budget and the number of employees, and to iteratively test the appropriateness of its value
47
48 proposition, which eventually mentioned both customers and partners: "The business
49
50 ecosystem will be a great experience to partners, as it will empower them with resources and
51
52 enable the creation of differentiated applications, and have a mutually profitable business that
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54 meets the [data and information management] needs of our customers. We want to provide
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our customers with a complete product and service offer that delivers solutions on their terms through a [connected] app marketplace.”

In September 2020, while still in the development phase of the programme, following two proofs of concept and two intermediate internal releases, the company released its first app as a showcase of its newly created digital platform. In October 2020, a new business case for the ecosystem was approved and this included financial targets – especially in the form of revenues – increasing relatively slowly for the following five years. This represented a substantial departure from the initial plan whereby the ecosystem was expected to make a sizeable business contribution to profit from the very beginning. Finally, in early 2021, the company CEO explicitly mentioned the goal of “exploring markets through an open ecosystem approach” in his annual corporate message, clearly diverging from what, only three years before, had been the dominant view of creating a closed ecosystem that would allow MNC Tech to retain intellectual property and control.

5. Discussion and Conclusions

This study examined the roles of performance measurement and management in the development of an organization’s business ecosystem strategy, thus responding to calls to investigate PMM practices in dynamic and complex contexts (Bourne *et al.*, 2018; Cardinal *et al.*, 2017) and to provide an in-depth analysis of the creation of ecosystem strategies (Dattée *et al.*, 2018; Shipilov and Gawer, 2020). Our findings show that MNC Tech’s ecosystem strategy went through several iterations where aspects related to its deployment led to significant changes to its design, to the point of leading senior managers to rethink the role of the firm in the ecosystem as well as the aims of the ecosystem itself. During 2016-2020, some PMM practices acted as barriers to ecosystem development, especially in the first phases, but others eventually supported it by providing a clear focus on ecosystem growth

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3 and by allowing the organization to discuss and convey strategic cause-and-effect
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5 relationships.
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10 *5.1 Theoretical contributions*

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12 The empirical results of this study lead to four main contributions to theory. First, numerous
13 scholars have highlighted the role of PMM in strategy implementation within organizations
14 and across supply chains (e.g., Busi and Bititci, 2006; Koufteros *et al.*, 2014; Micheli and
15 Mura, 2017; Maestrini *et al.*, 2018). While various authors have criticized current PMM
16 practices as too control and monitoring oriented (Melnik *et al.*, 2014; Pekkola and Ukko,
17 2016; Bourne *et al.*, 2018), it is unclear how alternative PMM approaches could be developed
18 in dynamic and complex business environments such as those that characterize ecosystems.
19 Indeed, given how ingrained “plan-and-execute” approaches are, some scholars have
20 questioned whether established firms are able to set and implement effective ecosystem
21 strategies without falling in the trap of using conventional hierarchical tools and practices
22 (Constantiou and Kallinikos, 2015). This study shows that, contrary to expectations, top-
23 down, financially oriented approaches may actually play a positive role by helping an
24 organization identify potential customers, estimate the size of the market, and devise ways to
25 capture value. Indeed, the lack of a clear set of performance indicators contributed to the
26 failed attempt to develop an ecosystem in 2016-2017. However, if not complemented by
27 other tools, traditional PMM practices may end up limiting the growth of the business
28 ecosystem. At MNC Tech, the imposition of financial indicators and targets proved
29 particularly problematic when attempting to deploy the ecosystem strategy in 2018, as
30 financial data appeared to be neither particularly accurate nor aligned to the broader inter-
31 organizational value creation processes typical of ecosystems (Constantiou and Kallinikos,
32 2015). Subsequent modifications to PMM practices triggered changes in the wider
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3 organization and in the development and implementation of the ecosystem strategy itself,
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5 thus highlighting the diverse effects of PMM tools and of the dynamics that accompany their
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7 design and deployment (Micheli and Manzoni, 2010). In particular, the new KPIs were
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9 developed and then reviewed by the business unit in charge of developing the ecosystem,
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11 rather than by the company headquarters, as it had traditionally been the case. KPIs were
12
13 predominantly non-financial and oriented towards understanding and promoting the growth
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15 of the ecosystem, rather than financial and aimed at capturing its profitability, as in a typical
16
17 financial control paradigm (Goold and Campbell, 1988). The process of setting PMM tools
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19 and of reviewing the resulting performance information also revealed a greater level of
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21 autonomy and emergence, thus providing empirical support to recent theoretical work on
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23 PMM in complex systems (Bourne *et al.*, 2018). Moreover, the two Strategy Maps helped at
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25 first to expose the absence of certain elements and causal links in the ecosystem strategy, and
26
27 then to crystallize and communicate the new strategy. Overall, this study highlights the
28
29 importance of having flexible PMM practices and of considering how different tools may
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31 play complementary roles in the development and implementation of organizations'
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33 ecosystem strategies at different points in time.
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40 Second, performance targets and KPIs were not just tools used to gather data, but they
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42 also embodied and expressed different perspectives inside the company (Melnik *et al.*,
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44 2010). The initial use of revenue and business contribution to profit indicators was not just a
45
46 mere way of gathering data about the financial success of the ecosystem. It was also a means
47
48 to reduce the ambiguity inherent in the development of the ecosystem and to communicate
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50 and enforce the dominant view existing in the organization - a product-centric logic whereby
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52 the firm creates and owns intellectual property. In phase 2, even though the intent was to
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54 create a stronger focus on customers, remarkably most of the indicators remained financial
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56 and ecosystem partners were not identified as key stakeholders in the Balanced Scorecard.
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3 This was not by accident, as PMM tools were still reflecting the dominant view (Beer and
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5 Micheli, 2017) despite changes in corporate strategy (Melnik *et al.*, 2014). However,
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7 constant emphasis on product unit sales conflicted with the aims of growing the ecosystem
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9 and with an alternative, customer-centric perspective founded on a more open and
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11 collaborative approach to innovation. While some PMM tools reinforced the dominant view,
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13 others, such as the Strategy Map developed by the DW business unit, highlighted tensions
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15 between perspectives and inconsistencies in the company's approach. In phase 3, PMM tools
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17 (e.g., non-financial KPIs, the second Strategy Map) encapsulated and promoted a customer-
18
19 centric logic. These tools therefore helped to clarify and deploy the ecosystem strategy, and
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21 to legitimise the work of DW. As MNC Tech moves towards the next stage, where the
22
23 company devices are even less central and an interoperable aggregation platform connecting
24
25 the company's technology devices to global platform providers for Artificial Intelligence and
26
27 Internet of Things services is created, further modifications to its PMM practices are likely to
28
29 be needed. For example, a more explicit involvement of ecosystem partners in the creation
30
31 and deployment of PMM tools would be expected (Pekkola and Ukko, 2016; Verdecho *et al.*,
32
33 2009). This study therefore shows that PMM practices can play a considerable role in either
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35 hindering or facilitating change (Alexander *et al.*, 2018; Micheli and Manzoni, 2010);
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37 however, modifications to PMM systems should not be considered as a purely technical
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39 matter, but as triggering substantial organisational tensions and potentially shifts in values
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41 and perspectives. This is particularly salient as highly flexible and fluid organizational forms,
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43 which require that PMM practices are discussed and modified on a regular basis, are said to
44
45 be necessary in increasingly complex and volatile environments (Cardinal *et al.*, 2017;
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47 Schreyögg and Sydow, 2010).

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56 Third, even though some authors have emphasized that companies must develop an
57
58 ecosystem strategy avoiding a "plan-and-execute" approach, the organizational implications
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3 of introducing effective ecosystem strategies have been investigated only to a limited extent
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5 (Jacobides *et al.*, 2018; Shipilov and Gawer, 2020). At MNC Tech, the process of creating
6
7 the ecosystem strategy was fuzzy, controversial, and highly iterative, rather than analytical,
8
9 deterministic, and unambiguously led by senior management, as portrayed in some previous
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11 studies (e.g., Adner, 2017; Iansiti and Levien, 2004). Changes to the ecosystem strategy also
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13 corresponded to a sizeable shift within the company, from a rather narrow, result-oriented
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15 strategic perspective to a more open-ended one focused on capability development. This
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17 research therefore highlights the importance of conceiving of ecosystem strategy
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19 development not as an orderly, top management team endeavour (Talmar *et al.*, 2020), but
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21 rather as a fluid and plural process that may have further repercussions within and outside the
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23 firm. Moreover, the process of ecosystem strategy creation should be considered in
24
25 conjunction with strategy implementation, including the various systems and tools that
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27 support it, such as PMM practices.
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33 Fourth, the ecosystem strategy literature tends to portray orchestrators as the creators
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35 of a business ecosystem and complementors as rather passive organizations that join it
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37 (Iansiti and Levien, 2004). For example, Adner (2017; pp. 47-48) states that an “ecosystem
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39 strategy is defined by the way in which a focal firm approaches the alignment of partners and
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41 secures its role in a competitive ecosystem. ... The ecosystem leader is the firm to whose
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43 vision of structure and roles others defer. It sets, and often enforces, the governance rules,
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45 determines timing, and often reaps the lion’s share of gains after the ecosystem is aligned.”
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47 This was not wholly the case at MNC Tech: while the company eventually decided to act as a
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49 complementor, it still played an active role in the creation of the main ecosystem of
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51 horizontal services and retained a certain level of control. Moreover, it contributed to the
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53 development of a value proposition that was highly customer centric and dynamic, and that
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55 was not entirely “enforced” by any other firm. This finding therefore challenges the view that
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orchestrators define a clear value proposition around which partners coalesce (Iansiti and Levien, 2004) and instead offers a more emergent perspective where complementors can play a decisive role (Dattée *et al.*, 2018) thereby furthering the debate over what determines the level and form of control in an ecosystem (Jacobides *et al.*, 2018).

5.2 Managerial implications

This study also has significant implications for practice. First, when creating an ecosystem strategy, managers should consider the importance of PMM practices as potential barriers or enablers to the development of the strategy and of the ecosystem itself. In particular, greater consideration should be given to which stakeholders to involve in the creation and implementation of PMM tools. For example, the top-down introduction of certain tools, such as financial or operational targets, may still be valuable; however, the process of defining and reviewing objectives, targets and indicators should happen in a much more participatory way and at a faster pace than normal, especially in large firms (Melnyk *et al.*, 2014).

Second, particular attention should also be paid to the rationale underpinning the features and uses of certain tools. In MNC Tech's case, for example, the number of patents was not simply a proxy for innovation: it was a signal that the firm should create and own intellectual property. In other contexts, operational indicators may express a certain approach and logic, which may make sense at some point, but may also hinder change and stifle innovation at a later stage (Melnyk *et al.*, 2010). Findings from this study indicate that organizations should adopt an iterative approach, carefully reviewing the effects of PMM tools at different moments in time and also explore the joint effects of different tools. For example, while financial targets can focus attention on the identification of new markets and on value capture, if insufficiently complemented by non-financial ones, they can hinder the development of a business ecosystem.

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3 Third, graphical tools such as strategy maps can help convey strategic intent and
4 articulate and probe cause-and-effect relationships. This is particularly important in the initial
5 phases of ecosystem strategy creation as these are characterized by considerable complexity
6 and ambiguity, and presumed links need to be discussed and tested. Importantly, this
7 approach should engage units or teams directly involved in the development of the
8 ecosystem, rather than being driven solely by the senior management team, and also regarded
9 as ways to uncover and reconcile competing views that could otherwise hinder progress.
10 Moreover, key stakeholders – particularly business partners and customers – should be
11 explicitly considered and, when appropriate, involved as ecosystems are inherently
12 collaboratively endeavours.
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29 *5.3 Limitations and future research*

30 As with all in-depth qualitative, inductive research, ours has limitations, many of which
31 present opportunities for future research. To study the development and implementation of
32 ecosystem strategy, we conducted an in-depth, longitudinal case study of an established,
33 multinational firm drawing on multiple data sources. Although other large companies may
34 experience similar issues because of their reliance on plan-and-execute approaches and on
35 financial targets and indicators as mechanisms to implement strategy and define success
36 (Fuller *et al.*, 2019), future research, both qualitative and quantitative, could involve a larger
37 sample of firms. Moreover, while the PMM practices deployed at MNC Tech are common
38 (Bourne *et al.*, 2018), alternative practices – such as the wider use of non-financial indicators
39 and a more bottom-up target setting process – may be found in other settings, such as SMEs
40 and start-ups. At the same time, we expect the iterative nature of ecosystem strategy
41 development and implementation and the role of PMM practices in expressing and enforcing
42 different perspectives to be present in other contexts.
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This work builds on studies that have explicitly considered aspects related to collaboration among firms, such as partnership development (Busi and Bititci, 2006; Verdecho et al., 2009); however, we chose the organization as our unit of analysis. Future research could investigate the roles of PMM practices in ecosystem strategy development at the level of the ecosystem. This would allow taking into account the perspectives of other relevant organizations such as ecosystem partners and investigating not only the emergence of an organization's PMM practices, but also those related to the collaborative organisation as well as potential conflicts among PMM systems developed by the single organizations comprising the ecosystem. Finally, this study focused on the initial stages of ecosystem creation; different results may be obtained when considering different phases in business ecosystems' lifecycles. As the Head of business architecture at MNC Tech acknowledged, "as we are early in the process of building an ecosystem, our organizational structure is fluid and that's right, as we are entering into new business. However, we need to adapt and change structure as we go along."

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Table 1 - Informant details during the main phase of data collection

Interviewee	Organizational unit	Location	Duration
DW General Manager	DW BU	Japan	60 mins
Deputy Chief Technology Officer	R&D	UK	60 mins
Ecosystem Business Manager	DW BU	Japan	120 mins
Strategy Director	R&D	Italy	75 mins
Alliance Manager	DW BU	France	45 mins
Head of Business Architecture	DW R&D	UK	60 mins
Go-To-Market Vice President	DW BU	US	45 mins
New Product Management Manager	DW BU	Germany	60 mins
Head of Business Innovation Strategy	Business Innovation	UK	60 mins
Portfolio Extension Manager	DW R&D	Germany	60 mins
Independent Software Vendor (ISV) Product Owner	External	Italy	60 mins
ISV Partner Account Manager	External	UK	60 mins
Senior Software Developer	External	Italy	60 mins
EU Developer Ecosystem Partner Manager	EU RHQ	Germany	60 mins
US Developer Ecosystem Partner Manager	US RHQ	US	60 mins

Table 2 - The main attributes and phases in MNC Tech's development and implementation of its ecosystem strategy

	Phase 1	Phase 2	Phase 3
Role of the firm	Orchestrator	Mainly complementor, but active in the creation of the business ecosystem	Mainly complementor, but active in the creation of the business ecosystem
Main goals for DW and the ecosystem	Increase the sales of company products	Enhance service provision	Expand the ecosystem and innovate offering
Performance measurement and management practices	Two main financial indicators: revenue generation and business contribution to profit. KPI tree developed at corporate level	Multiple indicators, although predominantly financial, developed at corporate level. Initial Strategy Map designed by DW	Strategy Map and Balanced Scorecard with financial and non-financial indicators, both developed by DW

Figure 1 – Main events and PMM practices in MNC’s design and implementation of its ecosystem strategy

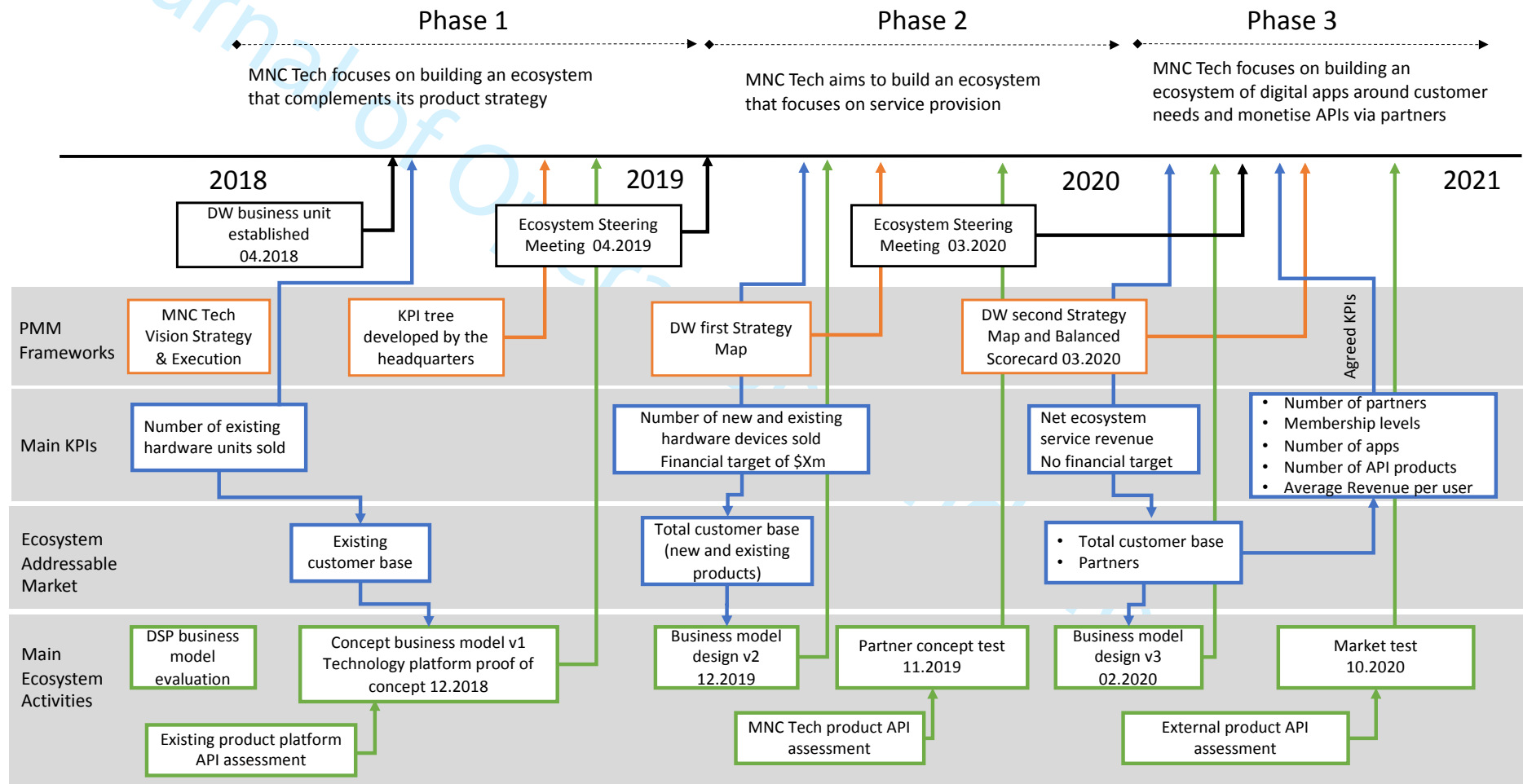
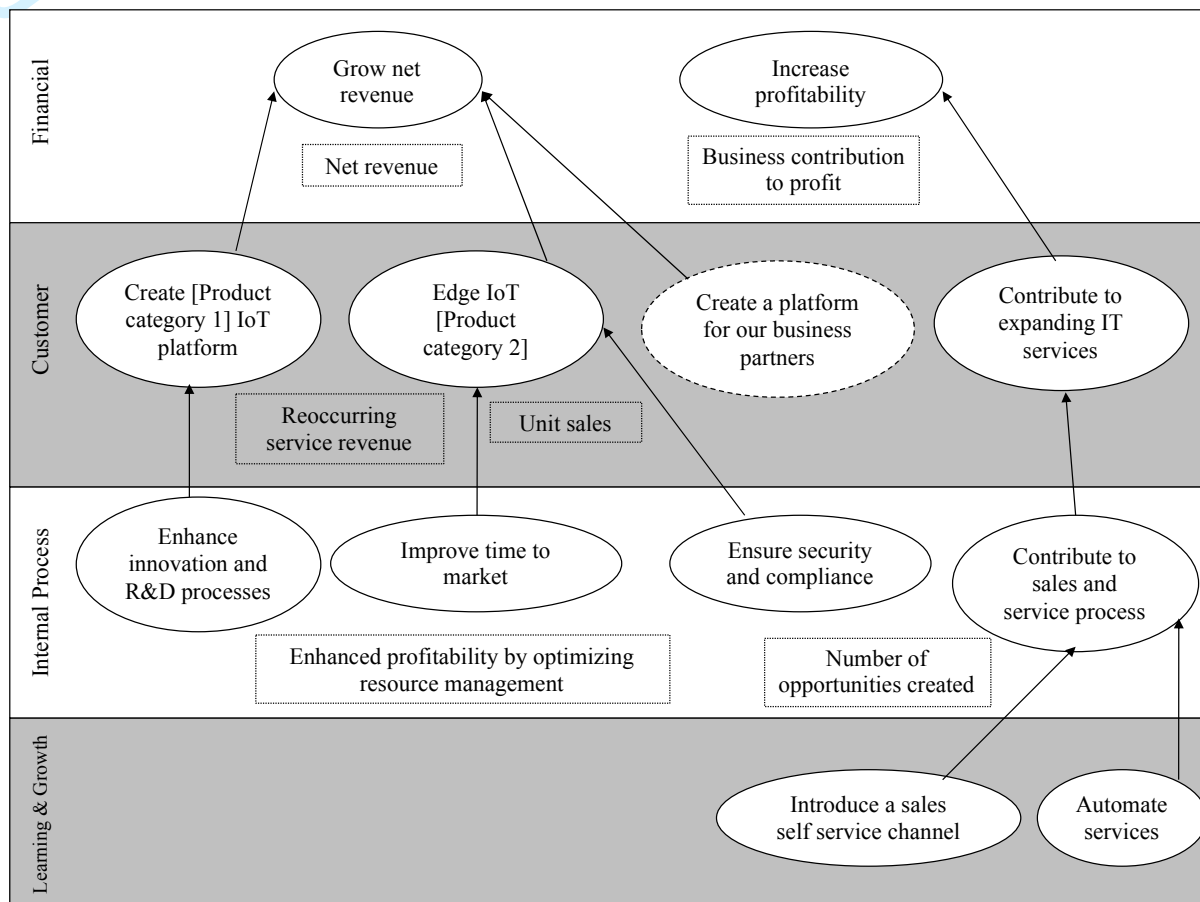


Figure 2: Phase 2 - Initial strategy map for DW



and Production Manag

Figure 3: Phase 3 – Second strategy map for DW

