Journal of Open Innovation: Technology, Market, and Complexity

MDPI

Article

What Dynamic Managerial Capabilities Are Needed for Greater Strategic Alliance Performance?

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Received: 29 April 2019; Accepted: 21 June 2019; Published: 24 June 2019

Abstract: Despite the rising interest in the nature of open innovation and its implications for greater strategic alliance performance, limited attention has been paid to what the dynamic managerial capabilities underpinning those processes are. Moreover, only limited research has examined how open innovation is practiced by firms working within various network forms (ecosystems, platforms, and strategic alliances) and what dynamic managerial capabilities ensure such networks' collaborations. We need to further develop the concept of the coupled (collaborative) type of open innovation and to show how open innovation mechanisms, such as strategic alliances, are underpinned by dynamic managerial capabilities and to understand what their "micro-foundations" are. Thus, the goal of this article is to understand the role of sub-capabilities (how managers think and decide) of dynamic managerial capabilities as drivers of successful alliance performance.

Keywords: open innovation; dynamic managerial capabilities; micro-foundations; alliance; blockchains

1. Introduction

Open innovation as a source of external knowledge vital for the competitiveness of companies [1]. In recent years, researchers have devoted more of their attention to the theoretical aspects of the open innovation paradigm, namely, on the reasons for firms in their focus to look to advance their technology through alliance arrangements [1,2]. Scholars Piller and West developed an interactive model of coupled open innovation and found that new streams of related research on open innovation, alongside user (closed) innovation, are R&D networks and strategic alliances [3]. This aspect of the coupled open innovation paradigm is particularly relevant to this study. Moreover, Cândido and Sousa argued, the growing openness of corporate innovation strategies increases formations of strategic alliances [4]. Managing strategic alliances is crucial for firms to gain a competitive advantage and create value [5]. Researchers have increasingly adopted the alliance perspective and open innovation paradigm in order to explain a variety of firm performance outcomes [4,6].

Open innovation is assuming that the firm in question should use external and internal ideas to reinvent its business model and develop new customer value propositions [1]. One of the open innovation process archetypes is a collaboration with technologically advanced partners through what is known as coopetition [7]. In the time of industry 4.0, new organizational forms and practices of coopetition are proliferating (such as joint ventures, coopetitive partnerships, strategic alliances). Industry 4.0 disrupts the value chain of companies and requires competitors to get involved in cooperation through alliances and strategic partnerships. The McKinsey consulting group, in their article on industry 4.0 value drivers, argues that open innovations are the "time to market" lever of Industry 4.0, driving the value creation process and, thus, meeting increasing needs to integrate data and processes from outside the company by means of strategic alliances. This is endorsing an argument that reaching the market with a new product earlier creates competitiveness through the potential of

the early-mover advantage [8]. This also suggests that strategic alliances in industry 4.0 made without open innovation principles wouldn't sustain long-run advantages within a competitive landscape.

In this vein, companies can leverage their partnerships in the form of strategic alliances to get access to outside advanced technologies [7]. The focal company needs to define which internal resources are used and which external interactions will be developed using alliances [4]. Therefore, the source of competitive advantage can be found in a strategic alliance with technologically advanced partners [7]. But, how can we foretell success and a forceful performance of a strategic alliance in the complex and dynamic settings of industry 4.0?

The dynamic capabilities concept was originally introduced precisely to account for the competitiveness of firms in a high-velocity setting. The concept of dynamic capabilities with which managers detect, grasp, and realize the ways in which firms make a living, helps to explain the relationship between the quality of managerial decisions and the organizational performance of the strategic alliance. We also want to know what dynamic managerial capabilities are needed for greater alliance performance in each phase of the alliance life cycle [9] as well as further details about their "micro-foundations." "Micro-foundations" means the "theory-based empiricism which seeks casual explanations for strategies, based on actions and interactions of organizational members" [10].

To answer this question, we intend to proceed with three logical steps. First, we discuss the dynamic managerial capabilities needed for success and the specific form of coopetitive strategy known as a strategic alliance. As a second step, we develop a conceptual model of research derived from our literature review and propose a research question. To answer the research question, the third step consists of contextual content analyses to classify the dynamic managerial capabilities needed for alliance success in each phase of an alliance life cycle. In the fourth step, we give empirical illustrations of our propositions by exploring the micro-foundations of dynamic managerial capabilities of a strategic alliance between Google and Carrefour (2018), based on illustrative case study research. We conclude by briefly foregrounding some of the study's theoretical and practical contributions, research limitations, and implications for future research.

2. Literature Review

2.1. Dynamic Managerial Capabilities

Teece et al. define dynamic capabilities as "the ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments", which became a dominant research topic regarding how to sustain advantages in a complex and volatile environment [11,12]. Most of the work on dynamic capabilities, as well as the original work of Teece et al. [11], asserts that dynamic capabilities were necessary to deal with rapidly changing environments. However, Eisenhardt and Martin [13] have argued that they could also be used in moderately changing environments. This means dynamic capabilities can vary with levels of dynamism in the external environment [14].

In the past decade, disruptive digital technologies, unexpected consumer behaviors, and disruptive competition have accelerated at an unprecedented level of change for actors in the field [15]. Thus, the question arises about disruptive innovation, is it the same as "in a complex and volatile environment" or are dynamic capabilities mostly utilized for incremental daily innovations? Pandit et al. found that "dynamic capabilities are important to leverage potentially disruptive technology; the Indian automotive sector and dynamic capabilities act through operational capabilities for actuating disruptive innovation manifestation" [16].

Later, for practical purposes of business analysis, Teece proposed a dynamic capabilities framework [17] as three categories of first-order entrepreneurial capabilities: sensing, identifying, and assessing new emerging opportunities, then, seizing necessary resources to address, grasp, and capitalize its opportunities, and reconfiguring the company's tangible and intangible assets, thus renewing core competencies. In continuous this tradition, Wagnera and Wägerb developed a process model that detects nine digitally-based micro-foundations of digital dynamic capabilities or digital

sub-capabilities that underpin the building of digital sensing, digital seizing, and digital transforming capabilities, and copes with disruptive technologies [15].

Adner and Helfat [18] introduced and defined dynamic managerial capabilities (DMC) as those "capabilities with which managers build, integrate, and reconfigure organizational resources and competences". Firms with dynamic capabilities have "entrepreneurial management and transformational leadership" [19]. Lessard et al. [19] also argued that dynamic capabilities (DCs) are based on both managerial cognition and leadership capabilities, along with organizational routines. What is more, if pursuing a collaboration growth strategy in the form of a strategic alliance to extend the range of products or services within a firm's market, dynamically capable management teams need managerial capabilities such as discovering and harvesting external sources of innovation. They also require the ability to manage organizational capabilities internally to reconfigure existing resources, as well as synchronize knowledge and key activities for greater alliance performance [17].

2.2. Dynamic Managerial Capabilities and Strategic Alliances

A strategic alliance is a purposive relationship between two or more independent firms that involves the exchange, sharing, or co-development of resources or capabilities to achieve mutually relevant benefits [9,20]. Corte argued that "today, the firm is a core of a network of interactions with different actors at more levels, of different sizes and strategic approaches" [21], (p. 10). Grosse at al. [22] argued that most innovative ideas have emerged in collaboration with others. Strategic alliances also give access to innovation-creating knowledge [23]. However, the integration of the two (or more) organizations poses a critical knowledge management problem for the new organization to tackle going forward [24]. Therefore, alliance management capabilities can be thought of as dynamic managerial capabilities. If this is so, how do dynamic managerial capabilities underpin the successful development of alliance formation and greater performance? What are the most important dynamic managerial capabilities needed for each alliance life cycle phase?

In recent research on the role of dynamic capabilities as drivers of business model innovation in mergers and acquisitions of technologically advanced firms, the author identified three sets or functions of dynamic capabilities which can be also useful to shed light on what is needed to form, develop, and transform an alliance to achieve greater performance results [25].

The first cluster of dynamic capabilities is associated with the functions of sensing and shaping opportunities. This includes searching and exploring markets and technologies, thereby contributing to discovering new customer segments and new key activities needed to satisfy emerging demand, as well as to select new technologically advanced partners for collaboration. Once a new market and technological opportunity are sensed, they must be "seized." Therefore, the second cluster of dynamic capabilities is associated with the function of seizing and engaging partnering companies to absorb and to integrate their new technologies, key resources, and capabilities. The third function of dynamic capabilities involves reconfiguring to transform the modes of customer retention and sales forces to create new customer value propositions and to capture value for stakeholders. Because of those transformation processes, the partnering companies reconfigure their cost structure and revenue stream and deliver new customer value propositions, thus maintaining a new competitive advantage.

2.3. Dynamic Managerial Capabilities, the Online Grocery Industry, and Blockchain Technologies

According to recent findings [15], firms in traditional industries need to build dynamic capabilities for their digital transformation. The use of new digital technologies, such as mobile technology, artificial intelligence, cloud, and blockchain [15] make operation faster, cheaper, and better in terms of quality, and enables innovative business models. Therefore, digital transformation is the core mechanism for future business models providing a collaborative approach [15], namely, by an alliance with technologically advanced partners. And the role of blockchain technology in those collaboration processes would be difficult to overestimate.

Blockchain is a new database technology that transforms strategic management, organizational design, and governance, due to its distributed and decentralized characteristics [26]. Using blockchain, retail giants of the grocery industry, like the France-based multinational Carrefour, are hoping to address these issues: improving the speed, traceability, and trackability, mitigating risks, saving time and cost, and gaining global competitive advantage.

Despite some micro-foundation research on building dynamic capabilities for digital transformation, there is very little research that examines and empirically illustrates how organizations develop dynamic capabilities for this transformation [15]. To identify these micro-foundations, one author has asked: what micro-foundations of dynamic managerial capabilities or sub capabilities [15] underpin an alliance formation process? Having answered this question, this paper presents a qualitative case study on the micro-foundations of dynamic managerial capabilities that are needed for greater alliance performance.

3. Research Design and Methodology

In the current research, collaborative growth strategy or alliance forming is an independent variable. Strategic alliance life cycle phase is a mediating variable. A mediating variable (or intervening variable) is one that arises between the time the independent variables start operating, influencing the dependent variable, and the time of their impact exerts an influence on it [27]. Dynamic managerial capabilities are the moderating variables of current research. The moderating variable is one that has a strong contingent effect on the independent variable-dependent variable relationship [27]. The achievement of objectives and greater alliance performance [9] are the dependent variables of the current research. The unit of the current research is a micro-foundation of dynamic managerial capabilities in the alliance formation process. Contrator et al. argued that the impetus of micro-foundation research is "to unpack or decompose aggregate firm-level concepts in terms of individual action and interaction; to understand the process that aggregate individual actions into resultant strategy outcomes" [10], (p. 6). Many of the causal linkages between alliance formation, alliance performance, and the micro-foundations of dynamic managerial capabilities which underpin the process are unclear [28]. Recently, a valuable contribution to understanding strategic alliances and dynamic capabilities was carried out by Mamédio et al. [29]. However, the topic of micro-foundations was only partly debated with regards to strategic alliance formation in previous management research.

The importance of applying theories about the micro-foundations of strategic action in co-opetitive research has been discussed [30]. Bengtsson et al. [30] argued that the future growth of the co-opetitive research field incorporates theories about the micro-foundations of strategic actions which can substantially enhance the field. What are micro-foundations? Foss and Lindenberg have said [28] that it is the heuristic way that collective/aggregate/macro outcomes (in the current paper: an alliance performance) and formations (in the current paper: an alliance life cycle) can be explained in terms of the actions, attitude, and interactions of lower level entities, typically (but not necessarily) individuals (in the current paper: the dynamic managerial capabilities of alliance partners). Concerning the format of the presentation, this author has adopted a conceptual frame developed by Teece [31]. The theoretical framework is presented in Figure 1.

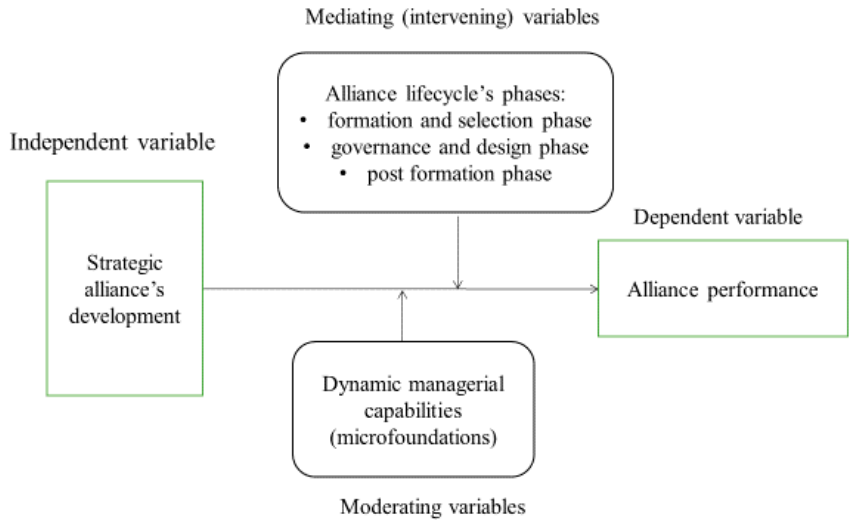

Figure 1. The conceptual model of the current research (Source: developed by the author).

Having designed a theoretical research framework, we ask the research question: what dynamic managerial capabilities are needed for each alliance life cycle to promote greater alliance performance and what micro-foundations of dynamic managerial capabilities underpin an alliance formation process? We have answered the research question by two stages of analysis. First, we have analyzed critical factors and key drivers of alliance success for each phase of the alliance life cycle. Then, we have organized dynamic managerial capabilities and their micro-foundations among the three phases of an alliance. We have found those capabilities by following the semantic (logical) correspondence of capabilities to key drivers of the success of the alliance. Second, we have empirically illustrated our propositions by analyzing a case study of a newly established partnership within the last year, namely, Alphabet's Google and Carrefour in 2018. The case study has been chosen to demonstrate how offline grocery giants transform their business model and become "digital," due to the open innovation of their technologically advanced collaborative partners. To answer a research question, we use contextual content analyses to classify the strategic partners' dynamic managerial capabilities and the micro-foundations needed for success in each phase of an alliance.

4. Data Analysis, Findings, and Discussion

We have adopted and extended the construct of Kale and Singh [9] on the key success factors of a single alliance. To specify distinctive features of dynamic managerial capabilities, we used Kale and Singh's key drivers of alliance success as a set of distinctive semantic features, particularly, their keywords given as the explanation of key drivers to three phases of the alliance life cycle: partner complementarity, partner compatibility, partner commitment for alliance formation and partner selection phase, equity sharing or ownership, contractual provisions, relational governance for alliance governance and design phase, use of coordination mechanisms, development of thrust and relational capital, and conflict resolution and escalation for the post-formation alliance management phase.

However, when companies work in business ecosystems they may require the establishment of several alliances with several partners and the ability to dynamically change these alliances. Therefore, we have adopted and extended the construct by Hoffman of the three stages of alliance portfolio development [32]: adapting strategy, shaping strategy, and stabilizing strategy as shown in Table 1.

Table 1. Allocated components of dynamic managerial capabilities among three phases of an alliance

Theoretical Perspective	Formation	Design	Post Formation
The phase of the single alliance life cycle [9]	Formation and selection phase	Governance and design phase	Post formation phase
Key drivers of single alliance success [9]	Partner complementarity. Partner compatibility. Partner commitment.	Contractual provisions. Relational governance. Equity sharing or ownership.	Use of coordination mechanisms. Development of thrust and relational capital. Conflict resolution and escalation.
Three stages of alliance portfolio development [32]	Adapting strategy: 'exploration alliances.'	Shaping strategy: 'probing alliances' or 'platform alliances'	Stabilizing strategy: 'exploitation alliances'
Strategic intentions [32]	Develop new resources and capabilities and to explore new development opportunities.	Broadening the resource base and increasing strategic flexibility by exploring new opportunities without making high investments.	Commercialize resources and capabilities gained through exploitation. Use a hybrid strategy (explore and exploit) in situations with high environmental uncertainty.
Three process dimensions of alliance portfolio management capability [32]	Partnering proactiveness: an organization's deliberate efforts to discover and act on new alliance opportunities.	Relational governance: an organization's engagement in activities for the development of collaborative relationships.	Portfolio coordination: an organization's engagement in synchronizing knowledge and activities across its alliances
Source of the strategic advantage of alliance portfolio [33]	First-mover advantages in imperfect market factors for partners.	Lowering contracting and monitoring costs and increasing incentives for value-creating initiatives by alliance partners.	Increasing knowledge flows and brokering information across the portfolio of alliances.
Dynamic managerial capabilities [17]	Sensing, discovering, and deliberating.	Seizing, broadening, and engaging.	Reconfiguring, synchronizing, brokering, and commercializing.
Micro-foundations of dynamic managerial capabilities	Sensing first-mover advantages, discovering new development opportunities, deliberating efforts to develop new resources and capabilities, and acting with new partners.	Seizing collaborative relationships, broadening the core competencies base, and engaging alliance partners in activities.	Reconfiguration of existing resources and capabilities, synchronizing knowledge and key activities, brokering information across the alliance, resolving conflict and escalation in the alliance, and commercializing alliance resources and capabilities.

Note: adapted from Kale and Singh [9], Teece [17], Hoffman [32], Sakhar et al. [33], and Čirjevskis and Felker [34].

Having specified distinctive features of dynamic managerial capabilities, we used Hoffman's keywords [32] for strategic intent for each strategy. Finally, we adopted the three process dimensions of alliance portfolio management capabilities published by Sarkar et al. [33]: partnering proactiveness, relational governance, and portfolio coordination. Having specified distinctive features of dynamic managerial capabilities, we used the authors' keywords given as the explanation of the source of the particular strategic advantages of alliance portfolios for each of the process dimensions. Finally, having used the "meaning-text" linguistic framework of Mel'čuk [35], we allocated dynamic managerial capabilities and their micro-foundations among three phases of an alliance by following the semantic (logical) correspondence of capabilities to key drivers of the success of each alliance phase, as given in Table 1.

Micro-foundations of dynamic managerial capabilities relating to alliance formation and the partner selection phase are sensing, discovering and deliberating, specifically (1) sensing new demands, (2) discovering new key activities, and (3) deliberating new partnerships. Micro-foundations of dynamic managerial capabilities for alliance governance and the design phase are the capabilities of seizing, broadening and engaging, namely, (1) capabilities to build robust internal partnership connections, (2) to work with internal and external alliance members and engage them, and (3) the capability to manage the strategic partnership. For the post-formation alliance phase, the micro-foundations of dynamic managerial capabilities are the capabilities of reconfiguring, synchronizing, brokering, and commercializing, namely, (1) reconfiguration of existing resources and capabilities, (2) synchronizing knowledge and key activities, (3) brokering information across the alliance, (4) resolving conflict and escalation in the alliance, and (5) commercializing alliance resources and capabilities. Having classified the capabilities in each phase of the alliance life cycle, we have answered the research question as shown in Table 1. Therefore, the main novelty for this work is presented in Table 1. To give an empirical illustration of our theoretical propositions, we discuss and interpret the case study research results in the following subchapters.

5. Case Analysis to Interpretation

Google's Alphabet is Carrefour's Partner in E-Commerce

Internet giant Google's Alphabet and Europe's largest retailer, Carrefour, signed a strategic partnership on June 11th, 2018, to create a multichannel approach to tap customers and to better compete with rivals in the French e-commerce grocery market [36]. The Carrefour company was created by the Fournier and Defforey families in 1959, opening its first supermarket in Annecy, Haute-Savoie, France, a year later. Over the past 40 years, the Carrefour group has grown to become one of the world's leading distribution groups [37]. Looking at the brake and the lever of this partnership, it obvious that the "lever" was to use dynamic capabilities of both the companies to deliver novel and innovative customer value proposition or "new grocery shopping experience" for its customers [36].

The Carrefour deal marked Google's first joint venture in the European region to ramp up the retailer's digital offerings [36]. When it comes to the brake, analysts and consultants at McKinsey and Oliver Wynam have argued that e-commerce was supposed to eat the profits, owing to the cost of investment in emerging technologies [36]. However, as per the example of Dutch retailer Ahold Delhaize, investments in online operations could offer just as high a return on investment than owning and running physical stores [36]. Collected secondary data on the micro-foundations of the dynamic managerial capabilities of Carrefour in an alliance with Google has been sorted into three semantically equivalent groups (the phase of the alliance life cycle), according to their implicit meaning. For the sake of visualization, the answers to the first research question and the micro-foundation of the dynamic managerial capabilities are given in Table 2.

Table 2. Micro-foundations of dynamic managerial capabilities of Carrefour in an alliance with Google

Theoretical Perspective	Formation	Design	Post Formation
The phase of the single alliance life cycle [9]	Formation and selection phase	Governance and design phase	Post formation phase
Dynamic managerial capabilities [17]	Sensing, discovering, and deliberating.	Seizing, broadening, and engaging.	Synchronizing, brokering, and commercializing.
Micro-foundations of dynamic managerial capabilities of the Carrefour and Google alliance	Carrefour has been lagging behind its peers for several years now in terms of e-commerce with a 9 % market share, compared to the market leader Leclerc with a 43.5 % share and Auchan with 25.3%, which has dominated the online French grocery market. Carrefour has pledged to significantly increase its digital investment to €2.8 bn over five years [38].	Europe's largest retailer has reacted to an increasingly competitive market in France by entering into a strategic partnership with the tech giant Google to create a "new grocery shopping experience" for its customers [38]. Carrefour opened an innovation lab in Paris with Google Cloud to work on developing new services based on artificial intelligence [38].	From 2019, Carrefour customers will be able to buy Carrefour products through Google Assistant-connected speakers, such as Google Home, as well as a new Google shopping website in France [38]. Google will also have a crucial role in implementing a culture of innovation at Carrefour [38].

Source: Developed by the author.

The exploration of the micro-foundations of the dynamic managerial capabilities given above has justified the research findings of Mamédio et al. While the key drivers behind Carrefour's new technology partner Google were to deliver a "new grocery shopping experience", Carrefour also aimed to cut costs and increase revenue. Thereby, Carrefour would reinvent its business model by saving cost, increasing operational efficiency and revenue streams, delivering new customer value propositions, and thus sustaining a competitive advantage in the home market. To conclude, the role of dynamic managerial capabilities in a technologically advanced alliance is to be as drivers of business model innovation of strategic alliance partners [25].

When it comes to blockchain technologies, in 2018, IBM announced that global retailer Carrefour will use the IBM Food Trust blockchain network as well. Carrefour stores will initially use the system to promote consumer confidence in a number of Carrefour-branded products and will expand its application to all Carrefour brands worldwide by 2022 [39]. This could potentially be a new subject of future research on blockchain-based dynamic capabilities in strategic alliances.

The seminal work of Gassman et al. identified some trends in open innovation by analyzing the latest published papers, illuminating nine different perspectives on research into the future of open innovation [40]. The current case study highlighted a current open innovation trend: "R&D intensity: from high to low tech". Open innovation mainly started in the high-tech sector, like in our case of Information and Communication Technology industry with internet giant Google's Alphabet, but there is a new trend for the low-tech sector to exploit the potentials of opening up their innovation processes as well, like in our case of the offline grocery industry, with Europe's largest retailer, Carrefour.

Therefore, the case study also highlighted a second open innovation trend: "structure: from standalone to alliances". Earlier research on R&D alliances focused primarily on cost-saving and transaction cost economizing [41]. The case study provides evidence that while the key drivers behind Carrefour's new technology partner Google were to deliver "new grocery shopping experience" (value creation), Carrefour also aimed to cut cost and increase revenue (value capturing).

Moreover, the case study highlighted a third current trend of open innovation, namely: "content: from products to services". While today's research on open innovation mainly aims at a product and, partly, process innovation, the huge potential of openly innovating the largest sectors in developed countries has been neglected. The offline grocery sector in Europe is still underdeveloped in terms of open innovation processes.

6. Conclusion, Limitations, and Future Work

In the current paper, the case study represented coupled aspects of open innovation in the form of a strategic alliance. Perhaps by not setting up a desired holistic model of open innovation [40], this paper is a novel contribution to the contrasting typologies of collaborative versus consolidative

strategies for fostering open innovation and delivering value propositions for customers in the grocery industry and illuminating the micro-foundations of the dynamic managerial capabilities needed for a digital transformation. The paper has provided several theoretical and practical contributions.

We found that dynamic managerial capabilities underpin collaborative strategies in an alliance and allow an alliance's partners to carry out the strategic changes that environmental discontinuities require. We have argued that the dynamic managerial capabilities needed for alliance formation and the partner selection phase are: sensing first-mover advantages, discovering new developing opportunities, deliberating efforts to develop new resources and capabilities, and acting with new partners. The dynamic managerial capabilities needed for alliance governance and the design phase are the capabilities of seizing collaborative relationships, broadening the core competencies base, and engaging alliance partners in effective and efficient activities. For the post-formation alliance phase, the most important dynamic managerial capabilities needed are the capabilities of reconfiguration of existing resources and capabilities, synchronizing knowledge and key activities, brokering information across the alliance, resolving conflict and escalation in the alliance, and commercializing alliance resources and capabilities. Therefore, the paper contributes to the scientific discussion on the framework of dynamic capabilities by demonstrating that the partnerships with technologically advanced giants are underpinned by the dynamic managerial capabilities of giant food stores to expand into new channels and markets. Against the backdrop of tough market conditions, the alliances seemed to be strategic moves to harness the dynamic managerial capabilities of both alliance partners and create dynamic digital competence- based synergies in the global grocery market.

The practical implication of the research is evidence that food retailers who want to grow with the latest consumer trends will need tech companies by their sides in order to keep up. They need the help of open innovation, with automatically replenishing products in stores, shopper subscriptions, artificial intelligence, voice technology, and digital assistants [42]. Blockchain technology adds a lot of benefits, but it is increasingly complex [43]. Blockchain technology has dynamic capabilities, many of which are still yet to be discovered [44]. This doesn't mean however that large corporations, like global grocery giants, aren't investing in figuring out how they can utilize blockchain.

When it comes to limitations, the specific dynamic managerial capabilities of mega-multinationals alliance portfolios [45] have not been considered and, therefore, there is a need for further research. The data sample is relatively small and therefore, a more robust analysis will be needed in future research.

Funding: This research received no external funding.

Acknowledgments: The paper support from RISEBA University of Applied Sciences in Business, Arts, and Technology is gratefully acknowledged. The author would like to express his sincere appreciation to Yves-Martin Felker for his valuable thoughts which enhanced the quality of the paper. The pronoun 'we' in this single-authored paper denotes the collective contribution of the above-mentioned researcher.

Conflicts of Interest: The author declares no conflict of interest.

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