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Conference Paper

Business Model Innovation and Digital Transformation of the LEGO Group: An Open Innovation and Dynamic Capabilities Perspective

24th Biennial Conference of the International Telecommunications Society (ITS): "New bottles for new wine: digital transformation demands new policies and strategies", Seoul, Korea, 23-26 June, 2024

Provided in Cooperation with:
International Telecommunications Society (ITS)

Suggested Citation: Farahmand, Elham; Muñoz I Busto, Isaac; Khan, Mudassir Akber; Adur, Hilda (2024) : Business Model Innovation and Digital Transformation of the LEGO Group: An Open Innovation and Dynamic Capabilities Perspective, 24th Biennial Conference of the International Telecommunications Society (ITS): "New bottles for new wine: digital transformation demands new policies and strategies", Seoul, Korea, 23-26 June, 2024, International Telecommunications Society (ITS), Calgary

This Version is available at:
https://hdl.handle.net/10419/302493

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Business Model Innovation and Digital Transformation of the LEGO Group: An Open Innovation and Dynamic Capabilities Perspective

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Keywords: *Business Model Innovation, Digital Transformation, Open Innovation, Dynamic Capabilities, The LEGO Group.*

1. Introduction

Digitalization is transforming industries, creating opportunities and challenges for established companies and startups (Rachinger et al., 2018). The LEGO Group, despite facing challenges, has successfully embraced digital transformation to enhance success. However, concerns about data security and ethical usage arise from extensive data collection from platforms like LEGO Ideas and Bricklinks (Holland & Wise, 2023). This research aims to address these issues and provides valuable insights from the LEGO Group's experiences to help organizations navigate their digital transformation initiatives effectively in today's digital landscape.

This research addresses a gap in understanding the integration of open innovation and dynamic capabilities in digital transformation by examining the LEGO Group's journey, providing a unique perspective and bridging the research gap. The gap also exists between theory and practice in business models, particularly in open innovation and dynamic capabilities. Organizations often struggle to apply these theories due to lack of practical examples. This research uses the LEGO Group's transformation to demonstrate real-world application of these theories, aiming to make them more accessible and actionable for other organizations.

The paper addresses two research questions:

1. How is the LEGO Group using open innovation for digital transformation?
2. How is the LEGO Group leveraging its dynamic capabilities for open innovation?

2. Literature Review

Digital transformation drives changes in the business world by introducing new technologies that have implications for society as a whole (Kiron & Unruh, 2017). Studies show that companies need to focus on Business Model Innovation (BMI) to thrive in this kind of transformation (Klos et al., 2023). Digital transformation is recognized in research as a catalyst for organizations to adapt their processes, structures, and strategies to foster open innovation (Urbinati et al., 2020). Open innovation involves organizations looking beyond their internal resources and actively engaging external sources for innovation, while also being receptive to market feedback and fresh ideas (Kraus et al., 2021). To effectively undertake digital transformation, firms also require a set of abilities that enable adjustments to their business models and organizational structure (Ellström et al., 2021). These abilities are called dynamic capabilities and offer a consistent framework for examining digital transformation, taking into account the ongoing and significant influence of

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digital technologies on business performance. In this literature review, these concepts will be further discussed within the LEGO Group's case.

2.1. Business Model Innovation and Digital Transformation

Digital Transformation in a company goes hand in hand with BMI practices (Klos et al., 2023). It enables firms to create value for customers through tailored manufacturing, servitization, expanded products and offerings, digital platforms, and sustainability efforts. This requires companies to reassess their competencies, roles, activities, and capabilities (Vaska et al., 2021). This is close to what happens during the process of BMI, which is defined as "the search for new logics of the firm and new ways to create and capture value for its stakeholders" (Casadesus-Masanell & Zhu, 2013). Thus, companies aiming to fully integrate digital transformation should prioritize innovating their business models (Klos et al., 2023; Warner & Wäger, 2019).

2.2. The LEGO Group's History and Digital Transformation Journey

The LEGO Group is a great case for studying digital transformation and BMI. Headquartered in Billund, Denmark, it was originally established in 1932 as a family-owned enterprise by Ole Kirk Christiansen. Over time, it has evolved into a key player in the global toy and entertainment industry, offering a diverse range of products (LeGoff, 2004). In its early days, the LEGO Group produced a variety of items, including wooden toys (Richter, 2022). In 1949, it strategically entered the production of LEGO plastic bricks, a significant move considering the novelty of plastics at the time (IvyPanda, 2023). Later, the company expanded into video games, TV programs, retail stores (Oliver et al., 2007), film industry, social media platforms, and theme parks (Qian, 2020).

In 2003, the LEGO Group faced a serious financial crisis, almost going bankrupt. Its decline stemmed from diversifying into digital entertainment, moving away from its core product, the LEGO brick. This shift caused disappointing sales and a significant debt burden (ToyPro, 2021). Expanding into new product lines and theme parks while neglecting its core offering worsened the financial strain (Qian, 2020). Moreover, designers focused on new concepts without considering costs, leading to increased expenses (Oliver et al., 2007). Producing more brick varieties also incurred high costs due to the need for new molds (Abbas, 2023). Additionally, unclear procurement procedures led to disjointed supply chain practices (Andersen & Ross, 2016).

Since narrowly avoiding bankruptcy in 2003, the LEGO Group has used open innovation to align with customer preferences, becoming a leading global innovator in the toy industry (Markowitz, 2018). El Sawy et al., (2020) highlighted the company's transformation starting with a new CEO in October 2004. Initially, the focus was on survival, implementing a strategy of reducing costs, closing unprofitable product lines, and refocusing on the core brand (Amarsy, 2015). From 2005 to 2007, the company aimed to strengthen profitable products by phasing out non-core lines and reducing the workforce (IvyPanda, 2023; Misra, 2020). The focus was on the core product, the brick, while exploring digital opportunities aligned with its business (El Sawy et al., 2020).

For successful digital transformation, legacy companies like the LEGO Group must enhance skills and reshape mindsets within their corporate IT workforce (Mixson, 2022). This requires fostering a culture that encourages experimentation, learning, and risk-taking, aligning with digital transformation's dynamic nature (El Sawy et al., 2020). As a result, collaboration with external partners possessing complementary expertise becomes increasingly emphasized (Haynes, 2023).

In 2008, the LEGO Group's strategy pivoted to prioritizing sustainable growth platforms while enhancing the core business. Recognizing the significance of digital platforms, it relied on corporate IT support for recovery, stability, and growth (El Sawy et al., 2020). However, before that, some researchers believed that this company lagged behind competitors in technology and IT aspects, hindering its efforts to broaden the product range (Schau et al., 2009).

By 2016, it had reversed its fortunes and prepared for digital transformation. Although it did not consider itself a digital company at that time, it had already heavily invested in various digital technologies. In late 2021, it announced plans to expand and advance its digital transformation by investing in digital platforms and establishing digital talent hubs in multiple cities (Mixson, 2022).

For over two decades, the LEGO Group has pioneered open innovation by collaborating with passionate online LEGO communities, leading to the discovery of innovative ideas and new product development opportunities (Antorini et al., 2012; Kapustina et al., 2021; Meiner, 2018). This engagement with customer communities has enabled strategic shifts towards product development for older age groups and related ventures (Antorini et al., 2012). These efforts aligned with the LEGO Group's long-term strategy for 2032, emphasizing "leveraging digitalization" (Mixson, 2022). Overall, digitalization has played a key role for the LEGO Group to explore new ideas, technologies, and partnerships while expanding its market reach without fixed costs (Antorini et al., 2012).

2.3. The LEGO Group's Business Model Innovation

The LEGO Group's business model has evolved over the years to adapt to changing market conditions and customer needs (Abbas, 2023; Kapustina et al., 2021; Oliver et al., 2007). This company has undergone significant transformation in its business model, manufacturing process, and organizational structure (Abbas, 2023). While some aspects of the company's BMI were covered earlier in the discussion of its digital transformation journey, additional points will be addressed here.

First of all, the LEGO Group evolved its existing business model, incorporating digital elements across all operations rather than creating a separate unit for digital products (Amarsy, 2015). Moreover, digital marketing adaptation was crucial for connecting with diverse customer bases, including children and nostalgia-driven generations (Markowitz, 2018; Qian, 2020). The company's successful strategy divided digital initiatives into four segments: consumers, shoppers, partners, and colleagues, aiming to address unique needs with tailored solutions (Haynes, 2023). It adapted its marketing to engage customer communities through social media and online discussions (El Sawy et al., 2020), recognizing digital activities' importance in product engagement (Haynes, 2023).

Furthermore, the LEGO Group strategically expanded its portfolio with successful characters and franchises like Chima and Ninjago, balancing proprietary and licensed properties (IvyPanda, 2023; ToyPro, 2021). This approach allowed the company to leverage its intellectual properties without solely relying on licensing agreements.

Internationalization is another key strategic focus for the LEGO Group to drive growth and overcome challenges in the toy industry. In today's global economy, reaching new customers, suppliers, and innovation networks through internationalization is vital. So, it is investing in platformizing its information systems to support this strategy, though it is not the sole business model strategy (Törmer & Henningsson, 2020).

In the 21st century, the LEGO Group still remains a thriving and highly adaptable corporation. Its values center on fostering imagination and creativity through "free play". By continually

adjusting its marketing tactics to fit emerging digital trends, this company remains successful and adaptable to societal shifts (BMI Lab, n.d.).

2.4. The LEGO Group's Digital Platforms

As discussed, the LEGO Group has embraced digital transformation through product innovation and community engagement strategies (Qian, 2020). LEGO Mindstorms' launch in 1998 was a turning point, integrating digital and physical experiences (Misra, 2020). Establishing the Adult Fans of LEGO (AFOL) community was one of early initiatives of this company for community engagement (Antorini et al., 2012). It continued its digital journey by launching platforms like LEGO Fusion and LEGO Dimensions, merging physical and digital play (Andersen & Ross, 2016; Robertson, 2014). Other examples of its digital presence include platforms like LEGO Club, My LEGO Network, and ReBrick, serving diverse age groups (Antorini et al., 2012).

The company also engaged in crowdsourced innovation through LEGO Ideas, a successful platform collecting product design ideas from enthusiastic fans worldwide (Qi et al., 2021; Ringen, 2015). This platform operates through three models: activities, contests, and product ideas, promoting collaboration and skill-building (Zhang et al., 2022). Approved ideas go into production, with designers earning royalties (Alharbi, 2018; Avasilcăi & Rusu, 2015).

2.5. The LEGO Group's Dynamic Capabilities

The LEGO Group's dynamic capabilities lie in its adaptable business model, employing a hybrid approach. This model, which is called a "flexible backbone", provides cost-effective messaging and support to certain customers while offering a deeper level of collaboration and customized solutions to others (Court et al., 2006). Flexibility is achieved through LEGO-like modules that cater to specific customer needs in areas such as enhancement, technical support, education, logistics, and new product development (Tuli et al., 2007). Additionally, they offer rapid response solutions through extensive online or in-person interactions with high-value customers, facilitated by advancements in systems integration, data analytics, and knowledge-sharing networks (Day, 2011).

2.6. Conclusion

The LEGO Group case provides a set of valuable lessons. It emphasizes the importance of careful diversification, especially when it involves resources and capabilities different from the core business. Empowered teams and dynamic research are highlighted for exploring opportunities within the core business. Crowdsourcing is noted as a way to engage with customers and improve products and marketing.

The LEGO Group's digital transformation focuses on products, marketing, and overall business strategy. Despite some initial failed attempts, they achieved success while maintaining their traditional core. Their transformation goes beyond product innovation to encompass enterprise-wide digitalization. Strong partnerships with suitable collaborators are also vital for them to expand into new markets. Ultimately, the LEGO Group's success demonstrates the effectiveness of blending various types of innovation in business models. This company serves as a valuable example, offering important lessons in both business models and strategies that can be used (Gurcaylilar-Yenidogan & Gul, 2021).

3. Methodology

This section outlines the research processes, starting with a literature review and an exploratory pilot study, followed by a qualitative examination of how the LEGO Group leveraged digital transformation to innovate its business model. The approach provided insights into the company's

engagement with external partners and internal capabilities for open innovation.

The literature review began with keywords like "the LEGO Group digital transformation," "open innovation," and "business model innovation," expanding from 41 to 85 sources. This iterative process refined the literature review to provide a current understanding of the research field, establishing a robust foundation for subsequent analysis.

A qualitative case study explored the LEGO Group's BMI, open innovation, and dynamic capabilities. Semi-structured interviews with key stakeholders provided in-depth insights, allowing for a comprehensive exploration of complex social phenomena relevant to the research questions.

A pilot study, involving an interview with a Digital Transformation Manager at the LEGO Group, assessed the feasibility of the research design. Findings led to refining research questions and interview focus, emphasizing the need for specific roles to address particular questions, thereby enhancing the research design's relevance.

Interview questions were categorized into digital transformation, open innovation, and dynamic capabilities. Purposive sampling selected participants with relevant insights. Out of forty potential interviewees, five participated, providing valuable data on the LEGO Group's digital transformation initiatives. Data was collected through 45-60 minute open-ended online interviews. Thematic analysis of the transcripts identified key themes related to BMI, open innovation strategies, and dynamic capabilities, offering a nuanced understanding of the LEGO Group's digital transformation approach.

Ethical conduct was ensured by providing participants with project details, obtaining consent for recording, and anonymizing transcripts. Participants could withdraw at any stage, ensuring their autonomy and comfort throughout the research process.

4. Theoretical Framework

The theoretical framework of this paper combines Business Model Canvas (BMC), Open Innovation Theory, and Dynamic Capabilities Theory to create a conceptual framework for studying the BMI for the digital transformation of the LEGO Group.

4.1. Business Model Canvas

To define the idea of BMI, it is necessary first to understand the business model concept. According to Teece (2010), the business model "articulates the logic, the data and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value." Besides its definition, a complete understanding of the business model will be reached when visualizing its building blocks (Osterwalder & Pigneur, 2013). For this purpose, BMC will be used to depict the LEGO Group's business model and its key elements using nine distinct building blocks:

1. **Customer Segments:** Identifies target groups a company aims to reach and serve, often based on shared needs or attributes.
2. **Value Proposition:** Outlines the product and service package that provides value to a specific Customer Segment, serving as the reason why customers choose one company over another.
3. **Channels:** Outlines how a company connects with and delivers its Value Proposition to Customer Segments.
4. **Customer Relationships:** Outlines the kinds of connections a company forms with particular Customer Segments, significantly shaping the overall customer experience.
5. **Revenue Streams:** Represents the income a company derives from each Customer Segment, after accounting for costs.

6. **Key Resources:** Describes the critical assets essential for a business model's success.
7. **Key Activities:** Describes the essential tasks a company must perform for its business model to be successful.
8. **Key Partnerships:** Outlines the supplier and partner network crucial for the business model's success.
9. **Cost Structure:** Defines the essential expenses of a business model, including those tied to creating value, managing Customer Relationships, and generating revenue.

Although criticism exists regarding the dynamism of the BMC framework and its capacity to interconnect its building blocks, it is a useful tool for this work as it provides a foundation for an overall analysis of a business model along its building blocks. To define the LEGO Group's business model, the relevant information collected through literature review and interviews will be classified into the different components of the BMC model, facilitating a clearer and deeper understanding.

BMC will establish the foundational knowledge regarding the definition of the LEGO Group's business model. Therefore, along with the open innovation and dynamic capabilities framework, and considering its limitations, BMC will assist in understanding the BMI for this company's digital transformation.

4.2. Dynamic Capabilities Theory

In this paper, the dynamic capabilities theory will be used to frame the building of capabilities for digital transformation in the LEGO Group's case. Therefore, the business capabilities studied will be narrowed down to the digital context. However, to fully understand digital dynamic capabilities, it is necessary to introduce the concept of digital transformation first.

As highlighted in the literature review, digital transformation sets itself apart from conventional forms of strategic change due to the accelerated pace of change driven by digital technologies. This acceleration results in heightened environmental volatility, complexity, and uncertainty (Matt et al., 2015). To effectively navigate these rapidly changing environmental conditions, "a firm should work in its ability to engage in adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competencies" (Teece et al., 1997). Therefore, the focus will be set in a theoretical framework that defines innovation-based capabilities that provide the capacity to create, extend, and modify a firm's resource base: the dynamic capabilities theory (Helfat et al., 2007).

The main assumption of the dynamic capabilities framework is that an organization's basic competencies should be used to create short-term competitive positions that can be developed into longer-term competitive advantages. In the first definition of the concept, Teece et al. (1997) separated these capabilities into three categories that have been maintained through the years.

According to Birkinshaw et al. (2016), incumbent firms need *sensing capabilities* to systematically scan the external environment for unforeseen trends that could potentially disrupt the organization. As emphasized by Teece and Linden (2017), this sensing activity should be pervasive across all levels of the organization, where lower levels contribute by furnishing information and insights regarding external trends to middle and top managers. The cultivation of dynamic managerial capabilities (Helfat & Peteraf, 2014) and the establishment of business units dedicated to scenario planning (Teece et al., 2016) are deemed crucial for effectively sensing unexpected trends.

At the same time, to address opportunities or neutralize threats, incumbents require seizing capabilities that "ensure leaders avoid hubris,

deception, bias, and delusion and that allow firms to experiment with decentralized boundaries, digital platforms, and new business models" (Teece, 2007). To seize new opportunities, incumbents in traditional industries are starting to experiment with agility - defined as "the capacity of an organization to efficiently and effectively redeploy/redirect its resources to value-creating and value-protecting (and capturing) higher-yield activities as internal and external circumstances warrant" (Teece et al., 2016). And, based on this agility, Sambamurthy et al., (2003) emphasize the importance of a digital context by proposing that firms should use information technology infrastructures to build their agility capacities.

The establishment and identification of opportunities are facilitated by sensing and seizing capabilities. However, for effective implementation of a digital strategy, firms require transforming capabilities to fully unlock the potential of strategic change (Teece & Linden, 2017). Day & Schoemaker (2016) report that an organization with "transforming capabilities is one where the agile, entrepreneurial mindset is actively cultivated within, with a broad expansive approach to external network-building as well." In this context, transforming capabilities play a pivotal role in supporting incumbent firms by facilitating the continual strategic renewal of assets and organizational structures, ensuring adaptability in rapidly changing environments (Teece, 2014).

Many scholars have expressed criticism towards the dynamic capabilities theory arguing that it is vague and tautological. This is a critical issue, and while the theory remains very helpful when addressing how to respond to the business-changing environment, it may fail to describe exactly how (Wheeler, 2002). Furthermore, Lawson & Samson (2001) suggest that the capabilities of the theory are difficult to identify and/or operationalize, and in some cases, those very capabilities can lead to a core capability becoming core rigidity. As such, the use of the theory in its current state is difficult without being able to further specify, develop, and identify those capabilities. For that reason, the framework introduced by (K. Warner & Wäger, 2019) will be used to identify, define, and categorize dynamic capabilities in the digital realm.

The dynamic capabilities theory will be used to study how the LEGO Group has updated and used its processes and resources to achieve an effective transformation of its business model toward digitalization. This way, it will be possible to understand the digital transformation process operationally. However, to identify the reason for the digitalization motivation it will be necessary to set a framework that contains the strategy and direction of the LEGO Group's BMI: the open innovation theory.

4.3. Open Innovation

Open innovation is a paradigm suggesting that companies ought to utilize both external and internal ideas, as well as internal and external routes to market, in their pursuit of technological advancement. It involves integrating both internal and external ideas into structures and systems shaped by a business model's defined requirements (Chesbrough, 2003).

Open innovation involves recognizing that valuable ideas can originate both inside and outside a company and can be brought to market from both internal and external sources. This contrasts with the closed innovation era, where internal ideas and paths to market were given higher importance (Chesbrough, 2003). In open innovation, the transfer of knowledge can encompass inbound knowledge to the central organization (utilizing external knowledge via internal processes), outbound knowledge from the central organization (utilizing internal knowledge through external commercialization processes), or a combination of both (connecting external knowledge sources with commercialization activities) (Chesbrough & Bogers, 2014).

To utilize the potential of open innovation, Radziwon et al. (2023) argue that open innovation should be incorporated into both corporate and business-level strategy as a tool to attain a firm's strategic goals. Chesbrough & Appleyard (2007) proposed a new approach called "open strategy" for understanding innovation communities, ecosystems, and networks for competitive advantage. They argue that recent developments indicate challenges for open innovation, including value capture, business model sustainability, corporate influence, and co-option of initiatives, therefore traditional business strategy is essential for sustainable models for open innovation. According to Chesbrough & Appleyard (2007), open innovation challenges traditional business strategies by emphasizing collective creativity and challenging established theories. Open strategy integrates conventional business principles with the benefits of openness, introducing innovative business models for sustained value creation within a community of innovators. It seeks to reconcile the forces of value creation with the imperative to capture value, addressing the undervaluation of open invention and coordination in traditional business strategy. Open strategy aims to update strategy concepts as openness extends beyond software to various industries (Chesbrough & Appleyard, 2007).

As with any theory related to BMI, open innovation presents challenges related to the uncertainties of an always-dynamic business context. However, by noticing its main risks - lack of knowledge and loss of internal innovation - and covering them with the integration of a dynamic capabilities framework, it will be possible to effectively analyze and understand the use of open innovation in the LEGO Group's BMI.

When studying the company's BMI, the analysis will be made using different concepts of the open innovation model. First, applying the open innovation definition within the LEGO Group's case focusing on the progress from their closed innovation era to nowadays and defining the nature of this innovation knowledge flow. Additionally, the effectiveness of the LEGO Group's open innovation will be assessed by studying not only where they have explored to innovate but also how effective this exploration has been. For that purpose, the analysis relies on analyzing how the key managerial factors for successful open innovation management by Bagherzadeh et al. (2021) have been applied in the LEGO Group's case.

Bagherzadeh et al. (2021) emphasize the importance of project-level attributes like complexity and uncertainty in open innovation. They identify five key factors for success: Openness Level, External Partner Choice, Open Innovation Mechanism Choice, Collaboration Process Formalization, and Internal Practices. For complex projects, they recommend diverse external partners and improved internal practices like rewarding knowledge sharing and enhancing communication.

Individually studying these different dimensions of open innovation will provide an optimal framework for a deep understanding of the LEGO Group's open strategy. Therefore, when applying this framework to the knowledge extracted from the reviewed literature and to the data collected from the surveys, relevant insights will be generated. This knowledge, when tackling its limitations by combining it with the knowledge generated within the dynamic capabilities framework, will constitute the cornerstone of this paper.

4.4. Conceptual Framework

As we are using multiple theories for the definition of the paper's conceptual framework, it will be necessary to clearly define the relationships between theoretical entities, giving a conceptual congruence oriented to the goals of this work.

4.4.1. Digitalization and Dynamic Capabilities

The constitution of the conceptual framework will start with understanding how the traditional dynamic capabilities approach can be adapted to the digital context. Originally, the first definition of dynamic capabilities only contemplated analogic capabilities. However, the irruption of digital technologies has revolutionized the way companies can sense, seize, and transform for new business opportunities.

Multiple research in recent years has worked on defining a new digital reality for the dynamic capabilities theory. The direction was set by Shuen & Sieber (2009), who defined a new dynamic capabilities framework that took into account digital, information, and network economics, causing a redefinition of the traditional dynamic capabilities. This new framework was the trigger for a set of research focused on setting dynamic capabilities, among which it is possible to find Warner & Wäger (2019) definition of dynamic capabilities for digital transformation.

In their work, Wäger and Warner identify the digital transformation of business models as a consequence of the already established digitalization process and, by studying real digital transformation cases, define a framework to build dynamic capabilities for digital transformation. The digitally-focused framework is structured using the typical categorization of dynamic capabilities resulting in Digital Sensing, Digital Seizing, and Digital Transforming. And for each category, the definition of necessary business capabilities for an effective digital transformation.

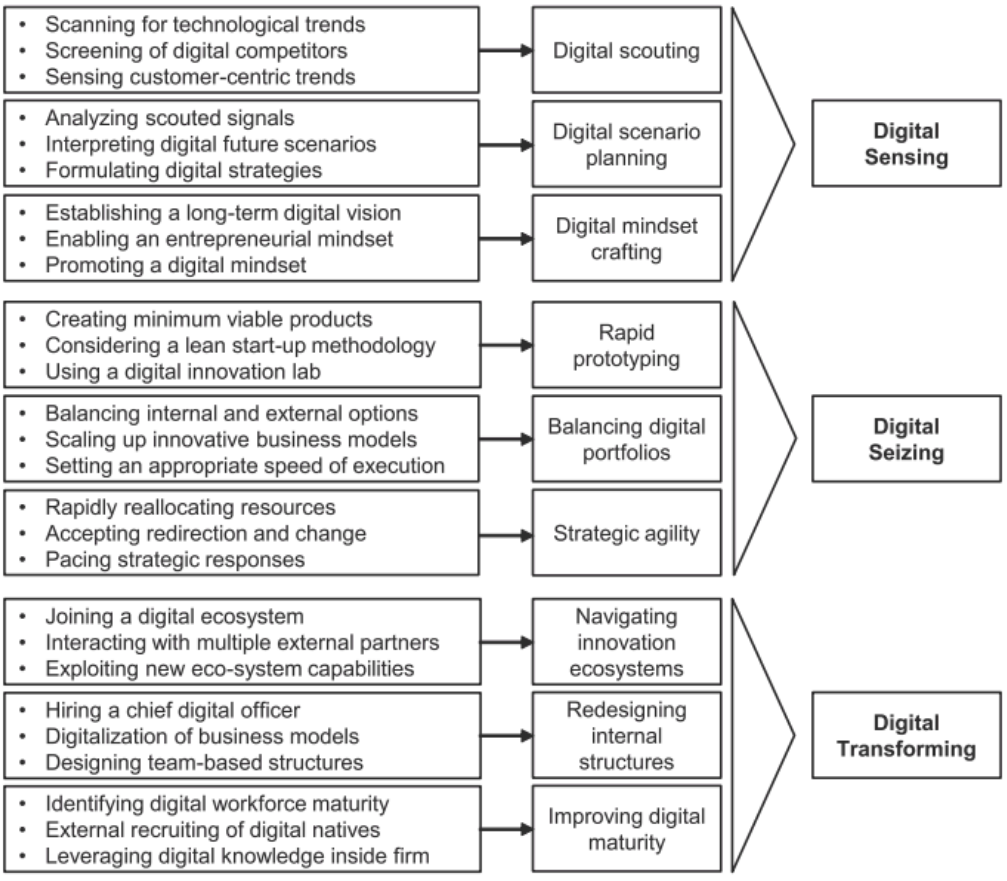

Figure 1: Digital Dynamic Capabilities Model (Warner & Wäger, 2019)

When presenting the *sensing* cluster, Warner & Wäger (2019) emphasize that the evolution of

digital technologies poses a chance for incumbents in conventional industries to update their traditional strategic approaches and these opportunities can be condensed into three core dimensions: Firstly, the integration of informal and formal scouting networks into the formal strategic planning processes of incumbent firms. Secondly, the conventional formal strategic planning mechanisms are lagging behind the disruptive impact of digital technologies, such as analytics and artificial intelligence, which have the potential to enhance strategic decision-making. Thirdly, the establishment of a digital mindset and culture across the entire organization is vital for constructing sensing capabilities that enable incumbents to capitalize on the latest unforeseen trends.

When reviewing the *seizing* cluster, Warner & Wäger (2019) underscore the significance of incorporating BMI as a fundamental element in an incumbent's digital transformation. Therefore, strategic agility emerges as the pivotal dynamic capability for incumbents to capitalize on the latest trends and avert potential existential threats. Incumbent firms must adeptly navigate strategic actions, recognizing the reality that no firm can emerge victorious in every competitive race. Consequently, continuous redirection is likely to become a common practice, even for the most traditional firms. Furthermore, dynamic capabilities in rapid prototyping offer the opportunity to expedite an incumbent's digital transformation, necessitating decentralized innovation labs or new subsidiaries with a blank canvas to facilitate ongoing digital mindset crafting. Ultimately, maintaining a balance in digital portfolios equips incumbents with the capability to scale BMI up or down, aligning with the evolving needs and demands of existing customers. Collectively, this array of capabilities reflects the current industry perspective on the prerequisites for seizing opportunities presented by digitalization.

Lastly, the *transforming* capabilities cluster includes a wide range of strategic issues relating to organizational culture, organizational redesign, and managing innovation ecosystems. To improve the digital maturity of the workforce, Warner & Wäger (2019) stress the significance of involving younger "digital natives" in the capability-building process within traditional organizations. Striking a balance between enhancing the digital maturity of externally appointed and internally promoted employees is crucial. However, challenges arise in building capabilities for redesigning internal structures, and incumbents must overcome these challenges by establishing a leadership team, strategy, and business model with a digital focus. The authors also emphasize the need for traditional firms to create or join a digital ecosystem for collaborative activities such as "co-creation" and "coopetition" with new partners, redefining the pace of collaborative behaviors and introducing new business models. Furthermore, the skill of "unlearning" existing practices becomes crucial for effective interaction and collaboration with a diverse range of new partners in digital ecosystems, requiring transformational leadership. These strategic endeavors will improve the workforce's digital maturity and support the ongoing digital transformation of incumbents.

4.4.2. Digitalization and Open Innovation

Like dynamic capabilities, open innovation theory has also experienced the impact of digitalization as digitization has dramatically changed the ease and nature of information flows rendering open innovation an imperative. These developments are so fundamental to nowadays business innovation that today’s open innovation is qualitatively and quantitatively different from that of the pre-Internet era. Therefore, given the digital nature of this work, it will be necessary to use a digitally updated version of the open innovation theory. For that, although not a static structured framework, the work of Bogers et al. (2019) will be used to understand the new digital open innovation possibilities and understand the impact of these changes in the LEGO Group’s case.

According to Bogers et al. (2019), the techno-business environment has changed since the widespread adoption of the Internet, resulting in ubiquitous digital platforms. Digital data and signals provide a common base for handling diverse types of information, including words, sounds, and images and the widespread use of common standards allows connectivity among diverse information devices. Therefore, "multi-invention" and "co-innovation" contexts are more common.

At the same time, digital convergence requires greater connectedness and platform engagement. Although the external sourcing of innovation is thus not new, the current open innovation model is different from previous ones. In almost every firm today, the best ideas and people lie elsewhere. This is partly a function of the globalization of business and advances in education and technological catch-up.

Finally, the last development that Bogers et al. (2019) identify is that companies are now able to connect with large and global technical communities quickly, which inevitably results in more efficient ways to find the right solutions for problems that otherwise might have been hard to solve. More and more work activities have become digitally connected, and new patterns of cross-functional collaboration have emerged. making access to domain and technology expertise critical to firm-level competitiveness.

4.4.3. Dynamic Capabilities and Open Innovation

Once the digital context is set for dynamic capabilities and open innovation theories, both will be connected to create a mutual framework using the work from Teece (2020), which states that open innovation is a natural fit with the dynamic capabilities framework as the two theories are mutually reinforcing.

Focusing first on the enhancement that open innovation provides for dynamic capabilities, Teece's (2020) *sensing* capabilities are enriched by the deeper technological and market understanding that comes with openness to external knowledge sources. Linkages with university researchers, for example, can be used to solve specific problems while also providing access to cutting-edge thinking not tethered to immediate commercial goals, giving management a clearer view of potential future technological developments. *Seizing* can be enhanced by the use of open innovation to build new capabilities. When a new business model is contemplated, a good management team will identify capability gaps. Where market-based options are available, the gaps can be filled through outsourcing. Seizing can also be enhanced by adopting an outbound open innovation perspective. This might make a firm more receptive, for example, to the pursuit of hybrid business models involving both direct exploitation and out-licensing of intellectual property to maximize the returns to innovation. Finally, *transformation* is implicated because opening up the innovation process can allow the redeployment of internal resources away from non-core technologies that can be externally sourced, further enhancing flexibility.

Looking from the opposite direction, strong dynamic capabilities enable effective open innovation practices. While open innovation is simple in theory, it can be fiendishly challenging in reality, and strong dynamic capabilities are needed to make it successful. When dynamic capabilities are weak, open innovation initiatives may be poorly chosen, poorly governed, and/or only weakly (or never) monetized (Teece, 2020).

Firstly, building strong *sensing* capabilities can help recognize external know-how opportunities and, at the same time, learn from them, two key activities for an effective open innovation integration. Regarding seizing capabilities, once the external source is identified, open innovation will be optimally adopted when a company has an agile decision-making mindset based on initiating combinatorial activities and adopting hybrid

business models. Finally, from a transforming capabilities perspective, open innovation will be done effectively when a company's transforming capabilities allow it to select the governance mode for external linking and integrate internal and external knowledge. Therefore, the building quality of capabilities of every category has a direct impact on the quality of the company's open innovation.

Zooming out in perspective, Teece's (2020) work will be used to theoretically define the linkage between both theories. As his approach provides a bilateral enhancement analysis, Teece's (2020) work will allow us to study how well-defined digital dynamic capabilities were key for the LEGO Group's digital open innovation and, at the same time, how the use of digital innovation has contributed to a strengthening of their digital dynamic capabilities.

4.4.4. Conceptual Framework Application

The resulting framework will therefore consist of a bilateral relation between open innovation theory and dynamic capabilities theory that will be framed within the concept of digital transformation. The two pillars of this framework will be Warner & Wäger's (2019) digital dynamic capabilities framework and Bogers et al.'s (2019) theoretical redefinition of open innovation in the digital context. Furthermore, these two pillars will be theoretically bridged using Teece's (2020) framework that establishes a relationship between the two concepts and defines the bilateral impact on each other.

Within this framework, the analysis strategy will be defined. The analysis will have its starting point on building the LEGO Group's BMC. Once their business model is defined, the focus will be on studying the company's digitalization needs using the information gathered by the literature review and interviews. By demonstrating this need, it will be possible to infer the LEGO Group's need to define a strategy of digital dynamic open innovation. That justification will be framed using Bogers et al.'s (2019) work, and the concepts learned in theories will be used to analyze the company's actual model of digital open innovation. Then, Teece's (2020) framework will be used to justify the rebuilding of their dynamic capabilities digitally. The LEGO Group's updated capabilities will be identified using Warner & Wäger's (2019) structure of digital capabilities categories and activities. Finally, Teece's (2020) work will be used again to study how the definition of this company's digital dynamic capabilities, triggered by the digital open innovation need, has influenced back on the creation of a successful digital open innovation strategy, closing the circle of influence

5. Analysis

This section covers the analysis of the interviews conducted with the LEGO Group's employees in different roles including Digital Transformation Lead, Business Lead, Senior Digital Product Designer, and Senior Product Manager.

5.1. Pilot study

A preliminary study with a Digital Transformation Manager revealed the LEGO Group's digital transformation focuses on automating operational processes rather than creating new products for existing systems. They use open innovation, collaborating with external stakeholders like the fan community when internal knowledge falls short. This strategy spreads and reduces investment risks but poses challenges, such as potential brand misuse and partnership imbalances. Additionally, their slow innovation pace - taking up to three years to develop ideas - risks losing relevance as trends change. Despite these challenges, the LEGO Group values its extensive IP collection and partnerships, including a strategic acquisition in California to boost market presence. In the pilot study, we discovered several topics for further exploration including the

agile way of working and crowdsourcing from the company's fans on digital platforms like LEGO Ideas. It also highlighted their ability to adapt and innovate as technology and market trends evolve.

5.2. Themes

After analyzing the interview transcripts, both deductively and inductively, seven themes were identified; i.e. digital transformation, BMI, open innovation, dynamic capabilities, key challenges, lean methodology and startup mindset, and innovation opportunity - digital ecosystem.

5.3. Digital Transformation

Digital transformation is a broad concept with diverse means to approach it.

> *"[...] digital transformation for me is a hard term. What does it actually mean? Because it can mean so many things. Is it the way that we work or the products we make or what does digital transformation mean?" - Interviewee #3*

Some interviewees defined it as

> *"When I talk about digital transformation [...] it's transforming our organization to become a more digitally savvy, nimble and agile organization. [...] " - Interviewee #1*

> *"[...] understanding what product is, understanding agile ways of working and being data informed [...] those 3 aspects I would highlight from a digital transformation perspective. " - Interviewee #5*

Digital transformation is a process and there might be no one-size-fits-all in adapting it into an organization. The restructuring has only been embraced recently.

> *"One of the ways that it's doing this transformation is by creating this new digital technology organization [...] that has digital expertise, engineers, digital designers, and product managers. Before that, they would sit under different organizations that might not be relevant. [...] [now] they all work on different aspects of the business and in each, there is an element of, how can we use digital technology to elevate what is existing over there" - Interviewee #2*

Digital transformation at the LEGO Group is a big undertaking with various initiatives involving multiple departments and people. It is very dynamic in nature which requires an agile approach.

> *"The digital transformation is giant, it's huge and of course it's changing and moving all the time. [...] It's not like because you had the plan two years ago then you follow the plan. We are agile so we adapt." - Interviewee #4*

5.4. Business Model Innovation

Interviews with different employees from different teams of the LEGO Group illustrated the innovation across various elements of their business model.

- **Customer Segments:** The LEGO Group targets a diverse audience: kids, adults, and "kidults" (adults who engage in hobbies from their childhood). Specific platforms like LEGO Insider have age restrictions to ensure compliance and appropriate content for different age groups.
- **Value Proposition:** The LEGO Group aims to capture the maximum amount of their audience's time by providing engaging and innovative products. They are expanding into new markets, such as the adult art and craft segment, and integrating digital experiences with physical bricks.

- **Channels:** Some teams in the LEGO Group are interested in creating omni-channel solutions
- **Customer Relations:** The LEGO Group builds relationships through initiatives like the "LEGO Masters" TV show and social media engagements, targeting both children and their parents.
- **Revenue Streams:** Key revenue streams include product sales, licensing deals (e.g., with Warner Bros, for LEGO movies), and partnerships (e.g., with Disney for Star Wars sets).
- **Key Resources:** Essential resources include human resources, particularly engineers.
- **Key Activities:** The LEGO Group focuses on partnerships, online store expansions, new payment methods, and market-specific products (e.g., for Chinese new year). They innovate continually, especially in integrating digital technology with their physical products.
- **Key Partners:** Partnerships with major franchises are crucial. These collaborations help reduce risks and ensure a diverse product range without the need for frequent layoffs.
- **Cost Structure:** Significant investments in IT and digital transformation aim to enhance the customer experience and increase sales through improved e-commerce platforms. Additionally, licensing fees, and production costs for co-branded products are notable expenses.

5.5. Open Innovation

The LEGO Group utilizes external sources and partners to innovate their products and services. This explores both external and internal applications of knowledge as well as co-creation. Their approach to product development, innovation, and user engagement is achieved through a combination of direct customer feedback, in-house research capabilities, and collaboration with external communities.

> *"surfacing the ideas that for me can come from three sources. It could be the users, the internal team or some kind of stakeholder input." - Interviewee #3*

> *"We have a channel where we can reach out or ask for input from very dedicated fans [...] if I need to get feedback on a specific concept that I am designing" - Interviewee #2*

In retail space particularly, the LEGO Group take inspiration from other brands on who they are creating digital experience in their stores.

> *"[...] we take a lot of inspiration from what is happening in the retail world [...] visit other stores from other brands and see how they are doing in terms of providing engaging experiences through technology in their stores, attending conferences on this physical and digital space, it's called phygital retail. [...] " - Interviewee #2*

One of the biggest venues of open innovation at the LEGO Group is LEGO Ideas platform where fans can submit design ideas for LEGO sets, which go through crowdsourcing, crowd validation, review, and co-creation stages before potentially being produced.

> *"The whole concept of LEGO ideas was also new for us to really invite people to design their own LEGO sets and if they got 10,000 votes from fellow fans, they would be brought into a quarterly assessment, then shortlisted, and then ultimately one or two sets per quarter would be chosen to actually come into production. And you as the designer would get a percentage of the profits." - Interviewee #1*

5.6. Dynamic Capabilities

The LEGO Group reorganized its IT departments into three pillars: Digital Agile Development, Engagement and Analytics Technology, and Enterprise Technology, aiming at digital transformation. The company hired product managers, technology professionals, and a chief technology officer to adapt to the digital era.

> *"When I started, the first big thing was to do a reorganization of our IT departments [into] three: […] Digital Agile Development […] focusing on the digital side of our consumer products […] Engagement and Analytics Technology […] focusing on engagement technology […] lego.com analytics and data behind the scenes. […] our third pillar was enterprise technology, […] all our core systems and corporate functions, like our finance systems. All of that was then reorganized into one digital technology organization […] That was the first program that set the foundation for digital transformation […] We laid out our entire architecture and structured it into digital products and then we needed a product organization. […] we started to structure the stuff we had with the capabilities we had into this product organization and then we hired the needed people, especially in more senior roles."-Interviewee #1*

5.6.1. Sensing

The LEGO Group emphasizes the importance of sensing the right opportunities for digital transformation, utilizing techniques like opportunity landscaping.

> *"[...] in order to be good at digital work, you have to trust that you can come up with whatever solution that's not the problem. […] The issue is finding the right thing to work on. So product discovery and what is largely called sort of assessing your opportunity landscape suddenly becomes key." - Interviewee #5*

5.6.2. Seizing

The LEGO Group employ a "product trio" consisting of an engineer, a designer, and a product manager to sense and seize opportunities.

> *"We have a product trio which consists of the designer, lead engineer and myself [product manager], and we have a weekly meeting where we align on the day-to-day stuff. Every half year, we have a day where we try to just align on what we believe are the biggest opportunities for us to tackle and in which order." - Interviewee #3*

> *"We sit as a tight group that are responsible for setting the direction. What are we putting into discovery? What are we going to put into delivery? These two different swim lanes that kind of go parallel to each other. So you deliver on one track and you have your discovery running underneath, feeding your delivery train." - Interviewee #5*

5.6.3. Transforming

The LEGO Group has undergone significant digital transformation, shifting from traditional project-based methods to agile and product-focused approaches. This involves investing in product management and bringing capabilities in-house to reduce reliance on external vendors.

> *"LEGO as a group has invested billions now in digital transformation, mainly with the aim of becoming what is in LEGO terms called product lead […] a huge investment in the business moving from waterfall projects, project thinking and focus on forecasting output based planning to then having to work on agile*

development. […] Before a couple years ago we didn't have any product management at all, we were just project managers and the whole legacy organization." - Interviewee #5

Ultimately, the biggest hurdles in digital transformation are cultural and people-related, requiring trust and adaptation rather than just implementing frameworks or methods.

> *"A large part of this [digital transformation] is cultural […] what works in the startup doesn't necessarily work here […] I find that whatever you're trying to do, whether it's digital transformation or digital products at the end of the day, this is about people and about trust." - Interviewee #5*

5.7. Key Challenges

Open innovation at the LEGO Group brings a wealth of ideas, making the selection process challenging and time-consuming.

> *"[…] for our physical products, we spend roughly 18 months from idea to a product that we can sell.[…] if we look at the really big themes that we're launching, we just launched a theme called Dreamzzz and that was a three-year research program." - Interviewee #1*

Additionally, negotiating intellectual property rights for fan-suggested themes, such as movie franchises, can impede the LEGO Group's innovation. These negotiations can restrict the integration of popular ideas, affecting customer engagement and competitive edge.

> *"LEGO Ideas is a great place to find both because people who are fans of PAC-MAN will push to make a PACMAN LEGO set. But then we need to negotiate with whoever owns the rights to PAC-MAN. And sometimes it's not possible." - Interviewee #1*

Moreover, adhering to EU regulations on data collection limits the LEGO Group's ability to leverage user data, which adds another layer of complexity to their decision-making process.

> *"Our quantitative source of data is somewhat limited because we just really want to be on the ethical high ground when it comes to tracking." - Interviewee #3*

The LEGO Group faces challenges due to clashing workflows between traditional, linear development phases preferred by senior leadership and the agile methodologies used by digital teams.

> *"Some Workflows clash when they don't meet in the middle because one side might be used to working in a certain kind of way [waterfall] and the other might be used to working in this sort of agile way." - Interviewee #2*

Strategic decisions on pursuing new opportunities require careful consideration of interconnected teams and their varying workflows. Shifting resources within a large organization like the LEGO Group involves balancing team needs and company priorities.

> *"[…] when it is a big organization like the LEGO Group there's always a different agenda at play at one time […] with big organizations like the LEGO Group it is a hot topic, how do you shift to pursuing other opportunities?" - Interviewee #3*

5.8. Lean Methodology and Startup Mindset

The LEGO Group has the structure, resources, and workflows of a large organization which also means it does not have the flexibility of a startup. However, one of the interviewees thinks there are ways, for instance, lean methodology, to

incorporate the "DNA of entrepreneurship" for innovation in the company's business model. Considering the nature of their products, this startup and lean mindset is the right choice to be successful in product delivery.

> *"LEGO will never be a startup but how do you at least take some of the DNA from entrepreneurship and put it into the business? […] the lean methodology, the lean startup, the ability to go through the product discovery loop and test your hypothesis rapidly, that's part of what I'm trying to do. […] We're a very small team in a big machine and we're working on something completely from scratch under a lot of uncertainty. So for this specific thing I'm working on, this is the right kind of mindset." – Interviewee #5*

However, it requires getting higher-ups on board to approve this new way of working. One important aspect that helps convince higher-ups is to showcase that it is not dangerous for the organization rather it provides ownership to the staff down the organizational hierarchy.

> *"That's half the work, just educating people on what it means to work this [agile, startup] kind of way. […] Going to the store and talking with the staff and showcasing [to higher ups] that it's not dangerous to do new digital transformation work where you involve your colleagues, you involve the staff you are working for instead of just feeding them what you want them to do. That's a lot more valuable because everyone's suddenly feeling co-ownership of what they're doing. And they feel a certain level of respect, trust and autonomy." – Interviewee #5*

5.9. Innovation Opportunity - Digital Ecosystem

One of the interviewees identified an opportunity for innovation, i.e. to create an ecosystem to synchronize all the relevant digital initiatives for a better user journey across various touchpoints.

> *"Insider community, LEGO Idea, Builder app, all those touchpoints until now are very independent. We are trying to bring them more into an ecosystem and to have some user journey that makes sense. If you buy your LEGO Idea set, you can co-build or you have the instruction in the Builder app. […]" – Interviewee #4*

One of the reasons for not seizing this opportunity is lack of collaboration between teams from different digital initiatives as they are operating independently. However, this challenge can be resolved by transforming the LEGO Group's existing structure and workflows.

> *"The [LEGO] group will have some needs to consolidate to have the same system.[…] So all those systems [CRM, evaluation, etc.] need to be aligned, you have back-end work to consolidate all those experiences […]. and then you have the front end and the user journey, […] we need to understand that to make sure the digital transformation makes sense for the user and not only for the [LEGO] group." – Interviewee #4*

5.10. Validation

After data analysis, a summary of our findings was shared with the LEGO Group employees who participated in interviews to receive their feedback. Note that not all the sections of the report were relevant to every interviewees, since they had different domains and expertise. For instance, some were more involved with open

innovation while others were more into digital transformation.

One feedback was that in the context of digital transformation hiring is not only focused on engineering, it includes all the key tech roles such as:

> *"Designers, researchers, data analysts and PMs [Product Managers]: Basically, key roles in any tech company" - Interviewee #5*

Another important feedback was that data collection is not limited to qualitative data only. There are investments in quantitative data as well.

> *"I'd consider emphasizing the investments made into quantitative capabilities as well. Likely, they surpass the focus on qualitative customer insights. Not that I'm a personal fan of the "data-driven decision making" mantra. I prefer to be evidence informed, personally. Not everything can nor needs to be an A/B test — depends on where you sit in the organization + the maturity of your product." - Interviewee #5*

> *"Mainly investments into improving our data collection capabilities at scale and enabling teams across the business to leverage said data (earlier in decision making)" - Interviewee #5*

6. Discussion

In this chapter, the interview data will be examined through the lens of chosen theories and reviewed literature. The research questions of this project will also be answered here and key concepts of the research will be discussed.

6.1. Business Model Canvas

The LEGO Group's business model transformation can be clearly reflected in the definition of their new BMC. With their digital transformation, the company has made a huge effort to reach different Customer Segments by recognizing and adapting its marketing strategies (Markowitz, 2018; Qian, 2020). Resulting in 4 different segments: customers, shoppers, consumers, and fans (El Sawy et al., 2020; Haynes, 2023).

Digitalization has also reshaped their Value Proposition, changing the physical brick for hybrid and digital products (IvyPanda, 2022; Robertson, 2014; Andersen et al., 2016; Interviews). Consequently, their Channels have also changed, moving to an omnichannel structure to engage with customers at physical and online points (Mixson, 2022).

The LEGO Group has also used the new possibilities of digital tools to improve its Customer Relationships. On the one hand, creating platforms - such as LEGO Ideas - to promote community building. And, on the other hand, using media channels - such as the LEGO Masters TV show - to reach and build relations with their audience (Antorini et al., 2012; Interviews)

Regarding Revenue Streams, although their physical product is still the main revenue source, the revenue stream of intellectual property licensing is gaining importance. This makes intellectual property, along with physical and human resources, the Key Resources for the LEGO Group (Ringen, 2015; Interviews)

Furthermore, partnerships with users and companies, opening online stores, dedicating new payment methods, and tapping into new markets have been defined as the LEGO Group's Key Activities (Interviews). Among these Key Partnerships, the company has associated with different media companies - such as Warner Bros. to create the LEGO movie or Epic Games to include LEGO characters in a videogame - and users - by building crowdsourcing platforms such

as LEGO Ideas (Ringen, 2015; Mixson, 2022; El Sawy et al., 2020; Qi et al., 2021; Interviews)

Finally, besides typical fixed costs the LEGO Group's Cost Structure is focused on IT which represents a big part but along with advertising and R&D expenses, are key for a successful innovation (El Sawy et al., 2020; Interviews)

6.2. Digital Transformation

The LEGO Group's journey from a family-owned business in 1932 (LeGoff, 2004) to a global toy giant is marked by significant digital transformation. Evolving from wooden toys to plastic bricks in 1949 (Amarsy, 2015), the company's expansion into video games, TV, and retail by the mid-1990s laid the groundwork for its digital leap in 2016. The company's digitalization strategy encompassed three major aspects: Product, Marketing, and Enterprise IT Platforms. In late 2021, the LEGO Group announced plans to advance their digital transformation, investing in digital platforms, products, and processes, and establishing "digital talent hubs" in multiple countries (Mixson, 2022).

The LEGO Group's digital transformation aims to enhance efficiency, creativity, and innovation by integrating digital elements across operations. Key to this vision is becoming a digitally driven consumer business by 2032, highlighted by the recent establishment of a dedicated digital technology organization. Teams at this company are integrating digital elements to enhance product development and customer experiences, affecting both internal operations and customer interactions. This agile transformation, driven by constant adaptation and refinement, indicates a continuous evolution. Despite significant strides, ongoing adjustments reflect the dynamic nature of the digital journey.

Challenges in this path include maintaining agility, seamless integration, balancing user needs, and leveraging resources. Further refinement may be needed to meet evolving consumer expectations in a fast-changing digital landscape.

6.3. Open Innovation

Collected information from interviews and literature review shows that the LEGO Group embraces diverse innovation channels, integrating internal and external ideas through platforms like LEGO Ideas and Bricklink Studio, alongside global insights departments. This aligns with open innovation theory (Chesbrough & Bogers, 2014), emphasizing external idea integration. The company also showcases strong in-house capabilities with their website and product communities, as noted by Chesbrough (2003), achieving a balanced approach.

Interview data highlights the company's active involvement with users, designers, and stakeholders for idea generation, reflecting open innovation theory's emphasis on external knowledge. Kids' preferences notably shape product development, illustrating the incorporation of external ideas into the LEGO Group's innovation process. This company adeptly balances control while involving external parties and maintains ethical data practices. It embraces open strategy elements, actively engaging its fanbase for input and conducting qualitative research sessions to ensure user participation in innovation.

The LEGO Group’s open innovation can be examined through five key managerial factors from Bagherzadeh et al. (2021): Openness Level, External Partner Choice, OI Mechanism Choice, Collaboration Process Formalization, and Internal Firm Practices.

The LEGO Group displays a high level of openness by actively seeking ideas internally and from external sources such as user feedback, fan communities, and partnerships. However, there is a lack of transparency in the decision-making process, particularly regarding final selections for production. In terms of external partner choice,

this company strategically collaborates with external entities, including fan communities, retail industry observations, and potential IP holders, aiming to source ideas and stay updated on industry trends. Despite this, challenges arise when negotiating with IP holders, impacting their ability to seamlessly incorporate popular ideas into products. The company's choice of mechanisms for open innovation is evident through LEGO Ideas, which features crowdsourcing, crowd validation, and a thorough review process, allowing fan designers to submit ideas, gather votes, and potentially co-create products with the company's designers. However, maintaining engagement and motivation within this platform can be challenging due to lengthy timelines and promotion difficulties for participants. Filtering through numerous ideas also delays the journey from concept to product. The collaboration process within LEGO Ideas is somewhat formalized, with submissions undergoing structured evaluation, review, and co-creation stages, though dependencies such as IP negotiations and lengthy review processes can impact this formalization. Lastly, LEGO practices an inclusive approach to innovation, involving various departments like global insights, design teams, and retail experience teams. The company emphasizes the importance of feasibility, desirability, and viability when considering ideas, but a hierarchical structure where senior leadership's final approval is necessary can potentially cause delays in implementing innovative concepts. Additionally, balancing market data needs with ethical considerations complicates data collection and usage.

Other criticisms of the LEGO Group include the perceived imbalance in the reward structure of LEGO Ideas, where successful designers receive 1% of net sales alongside acknowledgment and set copies (Holland & Wise, 2023). This may undervalue the effort put into designing sets. Additionally, while the company engages in licensing as an outbound open innovation, its primary focus remains on inbound forms. Internally developed technologies are mainly for internal use, indicating a strategy centered on enhancing internal capabilities rather than pushing innovations outward.

In conclusion, the LEGO Group's open innovation practices align with open innovation theory, balancing internal and external idea generation. However, challenges such as idea selection and negotiation hurdles persist. Nonetheless, the company's strategies emphasize the exchange of knowledge between internal and external sources for innovation.

6.4. Using Open Innovation for Digital Transformation (RQ1)

The LEGO Group blends digital elements into products for smooth customer experiences, reflecting a digitally powered open innovation model. Collaborating closely with its user community, especially through LEGO Ideas, the company adapts products to digital preferences, driving digital transformation through fan input.
The LEGO Group invested in digital platforms to expand its digital transformation, as discussed by Mixson (2022). Interview data indicates proactive engagement across digital platforms, particularly LEGO Ideas, fostering open innovation. This platform enables crowdsourcing and co-creation, aligning with theoretical requirements for digital transformation's connectivity and platform engagement. Furthermore, the company sources ideas from diverse external sources like user communities, industry reports, and global technical communities, in line with contemporary trends. This shift emphasizes accessing expertise and ideas beyond organizational boundaries. However, it is essential to recognize the value of in-house expertise and internal innovation processes.

The LEGO Group's adaptability and strategy refinement in response to evolving digital landscapes reflect the transformation of open

innovation in the Internet era. Yet, balancing investments between long-term sustainability and potential obsolescence poses a challenge.

6.5. Dynamic Capabilities

The LEGO Group's group strategy direction towards open innovation has forced an adaptation of their capabilities into a more dynamic aim to become "a more digitally savvy, nimble, and agile organization" (Interviewee #1). To achieve that digital transformation, the company has made a special effort to achieve a "continuous and agile transformation" (Interviewee #4) based on the building of digital dynamic capabilities for BMI (Klos et al., 2023; Warner & Wäger, 2019). The LEGO Group's digital transformation has affected all the areas of the business model (El Sawy et al., 2020) and consequently, all three categories of dynamic capabilities: sensing, seizing, and transforming capabilities, proposed by Teece et al. (1997).

Building digital scouting as part of their digital sensing has been crucial from both a product and workforce perspective. Interviewee #1 emphasized the need for constant vigilance and incremental improvements to enhance work processes and products. Similarly, Interviewee #5 highlighted the challenge of selecting the right solution for digital innovation, underscoring the importance of effective digital sensing. Initially, the LEGO Group tried using external agencies to identify opportunities but found this approach costly and uncertain. Instead, they now focus on maintaining control over their strategy by involving external parties selectively. The LEGO Group's approach includes studying major trends, conducting digital scenario planning using the OKR planning template, and understanding user journeys through data analysis. Additionally, to foster effective digital sensing, the company is developing a digital mindset crafting initiative, such as a remote-work system to encourage digital adoption (Interviewee #5).

When it comes to seizing the sensed opportunities, the LEGO Group is improving their capacity for rapid prototyping. For that purpose, they also have created an R&D Future Lab dedicated to research and enhancing the seizing of innovative ideas (Andersen & Ross, 2016). At the same time, although the LEGO Group is an incumbent company, they are trying to improve its innovation mechanisms by setting a "DNA of entrepreneurship." According to interviewee #5, this company is using start-up methodologies - such as lean methodology - to foster "the ability to go through the product discovery loop and test your hypothesis rapidly." This methodology, although it required some convincing when presented to the management board, is key for product development and delivery (Interviewee #5). Additionally, as stated by multiple interviewees, another key factor for effective digital seizing has been the adoption of strategic agility. The LEGO Group has integrated the agile mindset into its seizing processes by changing the structure of the work methodology from linear (Waterfall methodology) to iterative (Agile methodology) and also the structure of the teams, with a dynamic allocation of the employees depending on the workload and the requirements on every stage of a project (Interviewee #5).

Finally, the LEGO Group has also worked on building effective digital transforming capabilities to create a digitally favorable context to effectively respond to new opportunities. For that purpose, the LEGO Group is redesigning its internal structures using an opportunity solution tree that starts with defining the end goal for the sensed opportunity and then works its way back to see different possible routes to reach that goal. To achieve this rapid prototype the LEGO Group defines teams with the "product trio" - consisting of an engineer, a designer, and a product manager - and promotes collaboration between different teams for an effective exchange of capabilities (Interviewee #5). Additionally, the company has reorganized its IT departments into three focus areas: digital consumer products, engagement

technologies, and enterprise systems (Interviewee #1). At the same time, the LEGO Group has made efforts on improving digital maturity. By hiring a new chief technology officer, the company has created a role that did not exist previously centered on satisfying digital needs. Also, it has "opened up digital offices that are solely there to cater to hire people that work in the digital tech field" (Interviewee #2). Finally, this company has also worked on improving the digital maturity of the existing employees with digital support and internal training (Interviewee #1).

Overall, the LEGO Group has been able to effectively build different dynamic capabilities that are suitable for the needs of the digital era (RQ1) and, at the same time, has leveraged these capabilities for open innovation (RQ2). However, it has also encountered some challenges when building these capabilities. The first challenge the company faced is adaptation. The LEGO Group has senior leadership staff who are used to the traditional, linear development phases contrasted with the more iterative and agile methodologies employed by digital teams which reflects a potential divergence in work styles. Therefore, its long history presents established processes that may require adaptation to accommodate the agile methodologies embraced by certain digital teams (Interviewee #2). The other challenge the LEGO Group has encountered is related to its size. As Interviewee #3 states, "When it is a big organization like the LEGO Group, there is always a different agenda at play at one time." Therefore, strategic decisions on what opportunities to pursue will be challenging as may involve careful scrutiny of interconnected teams.

6.6. Leveraging Dynamic Capabilities for Open Innovation (RQ2)

When studying the RQ1, it was possible to analyze the suitability of open innovation as the innovation strategy for the digitally transformed business model of the LEGO Group. However, for a complete analysis of the company's BMI, it is necessary to study how it has its capabilities for the new digital direction towards open innovation. That goal is stated in RQ2 and given the gathered information from the literature review and interviews it is possible to analyze the bilateral enhancement between open innovation and dynamic capabilities. Teece (2020) states that open innovation is a natural fit with the dynamic capabilities framework. The two theories are mutually reinforcing, proving the LEGO Group's strategy right when deciding to build digital dynamic capabilities to face open innovation.

Open innovation is simple in theory but can be challenging in reality, strong dynamic capabilities are needed to make it successful (Teece, 2020). For that purpose, the LEGO Group has built capabilities in each category - sensing, seizing, and transforming - centering them in a digital context as a consequence of the digital nature of the open innovation strategy. Building strong sensing capabilities - such as its digital scouting or digital mindset - has helped the company to recognize external digital opportunities and, at the same time, learn from them (Interviewee #5), two key activities for an effective open innovation integration. Regarding seizing capabilities, open innovation has been optimally adopted by the LEGO Group due to the company's agile decision-making mindset based on initiating combinatorial activities and adopting hybrid business models (Interviewee #5). And, finally, from a transforming capabilities perspective, open innovation has been done effectively by the LEGO Group as the company, by redesigning its internal structures and improving its digital maturity, has been able to select the governance mode for external linking and integrate internal and external knowledge (Interviewee #1, Interviewee #2, Interviewee #5).

At the same time, the quality of the LEGO Group's digital dynamic capabilities has also improved with the use of an open innovation strategy. Based on what was stated by the

interviewees, the building of the company's sensing, seizing, and transforming capabilities has been enriched by the deeper technological and market understanding that comes with openness to external knowledge sources. For example, as explained by Interviewee #5, by hiring outside companies for innovation the LEGO Group has realized that promoting better digital scouting is most of the time more effective. Also, by openly redesigning internal structures - integrating part of the workforce as external in a seasonal way - the LEGO Group has been able to improve its strategic agility and rapid prototyping dramatically.

Therefore, it is possible to affirm that although the building of dynamic capabilities has posed multiple adaptive and sizing challenges for the company, the LEGO Group has been able to successfully leverage its digital dynamic capabilities for open innovation.

7. Limitations

This section is crucial for ensuring transparency and responsible research, enhancing the study's quality, and contributing to scholarly discussions on digital transformation in large companies. The topic's complexity required insights from specific employees of the LEGO Group. Initial interviews focused on areas like automation of work processes and customer experiences, but topics like open innovation and dynamic capabilities were less explored. This highlights the need for interviewees familiar with the LEGO Group's operations to provide nuanced insights.

However, the selection of participants from the researchers' social networks limits the study's representation, reflecting primarily the context of the LEGO Group in Denmark. Researchers faced challenges in engaging a broader range of employees due to work commitments and poor response rates. Future studies should aim to involve top leadership to gain deeper insights into the LEGO Group's business model and dynamic capabilities. Although efforts were made to contact around forty individuals, responses were mostly from the researchers' direct connections, limiting the diversity of perspectives.

The literature on the LEGO Group's digitalization, business model, and capabilities is primarily based on the work by El Sawy et al. (2020), which provides valuable insights into its foundations, digitalization processes, and entrepreneurial capabilities. However, there is a scarcity of literature specifically addressing open innovation and dynamic capabilities at this company.

8. Conclusion

The LEGO Group's digital transformation journey, focusing on open innovation and dynamic capabilities, offers insights into how companies' business models evolve in the digital landscape. The company's shift in the BMI towards digital experiences and hybrid products aligns with evolving consumer preferences. Open innovation initiatives, like LEGO Ideas, integrate internal and external ideas, aligning with Open Innovation Theory. However, challenges persist in balancing sustainability investments with evolving digital landscapes. The group's focus on digital sensing, seizing, and transforming capabilities demonstrates adaptability and responsiveness. Several challenges exist like adapting established processes and strategic decision-making across diverse teams. The lessons learned offer actionable strategies for organizations navigating their own digital evolution effectively.

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