15. Technology, Innovation and Supply Chain Management

Competitive Session

Innovation Governance and Innovation Leadership in Different Contexts

ABSTRACT

It appears that there is a gap between the importance of innovation relative to how it is managed and led. The paper suggests that innovation governance and innovation leadership can be greatly enhanced within organisations if executive decision makers had better taxonomies available based on important contextual variables. The aim of this paper is to provide direction for future research aimed at identifying generic taxonomies or patterns that assist managers and leaders understand when to apply different innovation strategies and innovation leadership styles. Much of the innovation leadership research view organisational innovation as a single construct like a black box, resulting in inconclusive results. This paper argues that organisational innovation is a complex system and should be represented by multiple constructs. An appropriate innovation leadership model is proposed. With the innovation leadership model in place, the focus turns to identifying and discussing important moderating contextual and situational variables on innovation governance and in particular the innovation strategy and innovation leadership. The paper suggests researching the influence of selected contextual and situational variables to support or modify the proposed innovation taxonomies and patterns.

Keywords: corporate governance, innovation, organisational performance, strategic leadership.

THE NEED FOR INNOVATION GOVERNANCE AND INNOVATION LEADERSHIP RESEARCH

It is generally accepted that innovation is one of the powerful ways to drive business growth. More than 70 percent of senior executives, responding to innovation surveys (Boston Consulting Group, 2010; McKinsey, 2007) indicated that innovation was among their top three priorities. At the same time many executives were disappointed with their ability to stimulate innovation. Only 55 percent of respondents were satisfied with the return on innovation investments (Boston Consulting

Group, 2010). Many executives agree that innovation is an important driver of growth, but few explicitly lead and manage it. About one third say that they manage innovation on an ad hoc basis when necessary and another third manage innovation as part of the leadership team agenda (Barsh, Capozzi & Davidson, 2008). Yet, in another McKinsey survey, 600 global business executives, managers and professional respondents regarded leadership as the best predictor of innovation performance (Barsh et al., 2008). There appears to be a gap between the importance of innovation to drive business growth relative to how innovation is being managed and led, in other words: how to steer and stimulate innovation.

Recent research suggests that there is a strong correlation between innovation leadership, innovation capability and innovation performance (Abraham, Gelbard & Gefen, 2010; Makri & Scandura 2010; Rosing, Frese & Bausch, 2011). They also recommend that the process of leadership and innovation are examined from a theory and practice point of view (Rosing et al., 2011) to go beyond the simple relationships currently researched. Friedrich, Mumford, Vessey, Beeler and Eubanks (2010) argue that few researchers have evaluated leadership and innovation in relation to the innovation context and moderating variables such as: innovation type, and innovation complexity. It is expected that these contextual variables account for the variability in good practice of innovation governance and innovation leadership (Friedrich et al., 2010) and that different leadership skills and styles are required for different innovation strategies (Deschamps, 2005).

There are many good journal and texts on innovation management (Khan, 2012) and some on innovation leadership (Deschamps, 2008; Wheelwright & Clark, 1995) but predominantly in the context of new product development. This literature provides practitioners with a number of innovation concepts, tools and techniques in an expanding innovators toolbox (Cooper, 2011; De Bes & Kotler, 2011; Silverstein, Samuel & DeCarlo, 2010) but it is largely silent on how to govern and lead innovation in different contexts (Friedrich et al., 2010; Hardenbrook, 2009). This paper suggests that leaders of innovation need informative taxonomies and conceptual models that guide appropriate and aligned innovation governance and innovation leadership styles to optimise organisational innovation performance. Such taxonomies have been researched and applied with great success within the discipline of operations and supply chain management (Christensen, Peck & Towill, 2006;

Christensen, 2011; Gattorna, 2010; Simchi-Levi, Kaminski & Simchi-Levi, 2006). This paper focuses on patterns and taxonomies that guide innovation governance and development of corresponding innovation leadership styles. A pattern in architecture is the idea of capturing architectural design ideas as archetypical and reusable descriptions (Osterwalder & Pigneur, 2010). In essence, the objective is to identify patterns of strategic fit between important contextual factors, innovation governance and innovation leadership style displayed by management members responsible for leading innovation efforts.

This paper will explore the following potential research questions:

1. What are the key contextual variables influencing innovation governance and innovation leadership styles?
2. Do these contextual variables contribute to the formation of generic innovation governance and innovation leadership style taxonomies or patterns?
3. What do the resulting taxonomies or patterns look like?

INNOVATION LEADERSHIP MODEL

Firstly, this section provides important definitions of innovation, innovation governance and innovation leadership. Secondly, the innovation leadership model in figure 1 is described. Figure 1 illustrates the relationships between the contextual variables, innovation governance, innovation leadership, innovation capability and innovation performance.

Definitions

A contemporary definition of innovation is provided by Keeley et al. (2013, p.5): 'Innovation is the creation of a viable new offering'. In other words, innovation is a process of bringing new ideas to value adding implementation or commercialisation. 'Innovation governance is defined as management mechanisms to direct, steer and stimulate innovation' and aligns with the ideas of Deschamps (2012). 'Innovation leadership is defined as the ability to adopt appropriate styles of leadership to lead employees to successfully create viable new offerings in line with managements innovation governance' and encompasses the definition details included by Abraham et al. (2010). On

the other hand, operations and supply chain management is focused on effective and efficient delivery of value offers.

Insert Figure 1 about here

Innovation Governance

Based upon the research by Deschamps (2005) and practical experience by former executives (Lafley & Charan, 2008) the emerging concept of innovation governance can be mapped against the following key knowledge areas described extensively in the innovation management literature: (i) innovation strategy, (ii) innovation structures and systems and (iii) innovation culture and climate. The (ii) innovation structures and systems and (iii) innovation culture and climate are extensively addressed in the innovation literature (Cameron & Quinn, 2011; Cooper, 2011; Trompenaars & Hampden-Turner, 2010) and will not be addressed further in this paper. But, there is no overall mapping or patterns of generic innovation strategy taxonomies that inform and enable alignment of (i), (ii) and (iii) with innovation leadership to drive the development of innovation capability within the organisation (Robertson & Breen, 2013).

Innovation Leadership

Firstly, it is possible to research and compare individual innovation leaders in terms of their mission, identity, beliefs, values and behaviour (Dyer, Gregersen & Christensen, 2009; Martin, 2007; Mumford, Conelly & Gaddis, 2003). In other words, individual leaders of innovation influence their own (iv) thinking and (v) behaviour as innovators, and as a result they influence groups or teams they lead.

Secondly, many practitioners and academics argue that ‘innovation is a team sport’ (Deschamps, 2008; Kaplan, 2012; Keeley, Pikkel, Quinn & Walters, 2013; Kelley, 2006). They argue that there is a dynamic that happens between people that produces results that are not seen with an individual. Leadership of innovation teams is therefore a core leadership skill that must be mastered. This can for example be studied from a (vi) team leader - (vii) follower perspective. Depending on

what aspects of innovation the team is responsible for, team leaders have a significant influence on the followers.

Innovation Capability

There is a wide range of innovation models and processes that describe how innovative companies' progress projects through phases, steps or stages in an innovation value chain (Hansen & Birkinshaw, 2007) with different focus such as: immersion, imagination, ideation and initiation in the exploration (or front-end innovation) part and incubation, industrialisation, introduction and integration in the implementation (or commercialisation or back-end innovation) part in a combined bottom-up and top-down mode (De Bes & Kotler, 2011; Deschamps, 2008). The innovation capability can be represented by the organisational (viii) ability to learn, (ix) ability to create and (x) ability to execute.

The proposed innovation leadership model guides us in understanding the relationships and building blocks of organisational innovation capability, but it is by no means a blueprint or roadmap to reach the ultimate maturity level of organisational innovation excellence.

Innovation Complexity

The innovation leadership model appears reasonably simple, the above text also hints at its hidden complexity (Friedrich et al., 2010; Rosing et al., 2011). Over the last 30 years, there has been a tremendous development in our understanding of innovation and it is possible to talk about a discipline as suggested by Drucker (2002). Important contributions include areas where there are apparent paradoxes or tensions innovation leaders must manage. These paradoxes or tensions contribute greatly to the difficulty of governing and leading innovation in different contexts and it is important that these paradoxes and tensions are appropriately addressed by the suggested taxonomies.

Important tensions include: Innovation uncertainty versus predictability and selection of appropriate innovation methodologies (Cooper, 2011), innovation exploration versus exploitation (Mueller, Rosenbusch & Bausch, 2013; Rosing et al., 2011), continuous versus disruptive innovation (Christensen, 1995), open versus closed innovation (Chesbrough, 2003), design thinking versus

traditional management thinking (Brown, 2008), core versus context innovation (Moore, 2004; Zook & Allen, 2011) and the selection of a portfolio of different innovation types (Keeley, 2013; Sawhney, Wolcott & Arroniz, 2006).

Cases on innovation, such as the following provide insight in regards to how different tradeoffs between the above tensions worked out successfully or failed in different contexts: Apple (Thomke & Feinberg, 2012), LEGO (Robertson & Breen, 2013), Medtronic (Deschamps, 2008) and Procter and Gamble (Lafley & Charan, 2008). It would be very beneficial that these tensions are incorporated into appropriate taxonomies to guide innovation strategy development and alignment with appropriate leadership styles.

GOVERNING INNOVATION IN DIFFERENT CONTEXTS

Findings by Elenkow and Manev (2005) suggest that the socio-cultural context directly influences innovation leadership and moderates its relationship with organisational innovation. Similarly industrial relationships between employer and employee representatives could be expected to influence innovation leadership. While these people oriented contextual and situational variables are of interest in regards to innovation leadership styles, this section focuses on identifying and analysing contextual variables that impact elements of innovation governance and particularly innovation strategy and the aligned innovation leadership style. One important dimension that has been addressed by some researchers is the exploration versus exploitation dimension (Deschamps, 2005; Mueller, Rosenbusch & Bausch, 2013; Rosing et al., 2011). This dimension is not addressed further in this paper as it has been researched to some extent already. The focus is on the following contextual variables: innovation clock speed, business architecture, innovation lead-time, organisational situation and innovation type. The variables are specifically listed in that order because innovation clock speed and business architectures are expected to drive innovation strategies, structures, systems and cultures that persist over a relatively long time. On the other hand, the organisational situation and pursuit of different innovation types are expected to be influenced by the afore mentioned variables and can be attributed to the portfolio of innovation projects an organisation can pursue at any given point in time. Based on the variables different taxonomies are suggested. The aim is to find overall patterns that guide innovation governance and innovation leadership.

Innovation Clock Speed (Customer Demand for Innovation)

Firstly, it is well known that different industries have different innovation clock speeds (Guimaraes, 2011) and variation on disruptive risks (Christensen, 1995; Downes & Nunes, 2013). This suggests that the importance of innovation varies between industries (Christensen, 1995; Guimaraes, 2011). Examples of high innovation clock-speed industries include: consumer electronics, software programs, pharmaceuticals, automotive, information technology, social media and fashion. Some of these are high speed due to the fast development in the technologies upon which these industries are built. Examples of low innovation clock-speed industries include: mining, retail, healthcare and brown goods. The question is how the innovation clock-speed and disruptive risks influence innovation strategy formation and innovation leadership within organisations.

Secondly, it is suggested that low innovation clock-speed equates to low innovation demand uncertainty and risk and that high innovation clock-speed equates to high innovation demand uncertainty and risk. It is expected that organisational innovation capability is less developed within low innovation clock-speed environments compared to high clock-speed environments.

Thirdly, many academics and practitioners have been working on devising appropriate innovation actions under different dynamic conditions and have suggested approaches such as: incremental, lean, agile and flexible innovation methodologies to match these dynamic conditions (Blank, 2011; Cooper, 2011; Smith, 2007), but to date there is no framework or taxonomy to classify different innovation strategies based on this dimension.

Business Architectures (Relationship with Customer)

Moore (2005a, 2005b, 2011) argues that large successful businesses have one of two business architectures. They focus on either (1) complex systems such as: NASA, Bechtel, Accenture and IBM that address specific customers or (2) volume operations that address a large number of customers such as: Commonwealth Bank, Walt Disney Pictures, Nokia and Holden. It is important to note that these business architectures have emerged in response to two distinct sets of customers: the early adapters that desire a particular solution, and majority who are happy with a cost effective solution. In their pure form the two business architectures are opposites in terms of contrasting strategies and how

value propositions or offerings are researched, designed, sourced, manufactured, marketed, sold and serviced (Moore 2005a, Moore 2005b). This has great implications in regards to the innovation strategy and how innovation is orchestrated within these two business architectures. Moore (2005a, 2005b, 2011) argues that innovation types and innovation tactics will play out differently depending on the hosting business architecture. He points out how diametrically opposed the two business architectures are in terms of the seven phases of the value chain (Moore, 2005a). Each of the business architectures has a flow from invention to deployment and optimisations, but how that manifests itself is quite different (Moore, 2011). Complex-systems businesses use projects as the execution mode to develop bespoke systems in close collaboration with customers. To gain scale from such projects companies develop pre-established solution architectures that allow customisation. Bechtel for example does this in terms of development and delivery of several Natural Liquid Gas (NLG) plants by reusing the same modular architecture. To develop bids and win contracts, companies focused on complex systems are more likely to have a central bidding process as a part of a core innovation activity. Volume-operations on the other hand specialise in highly packaged products or service transactions that address the needs of a large group of consumers. As a result they have a less intimate relationship with customers. The products or services may be developed by innovation projects, but qualitative market research is applied to understand the voice of the consumer. Volume operations companies such as consumer electronics companies have a product development process as a core innovation process.

By combining the contextual variables of business architecture and innovation clock speed / innovation predictability into a matrix and map appropriate innovation methodologies the taxonomy in figure 2 emerges. This taxonomy is inspired by and has strong analogies to the one for supply chain operations systems suggested by Gattorna (2010). The suggested research must confirm or reject its validity.

Insert Figure 2 about here

Collaborative: predictable demand managed through tight collaboration with customer - focus is on retention of the customer. Lean: demand predictable, but the loose relationship does not necessitate an extreme service level - focus is on efficiency. Agile: unplanned or unforseen demand and sometimes loose relationship with customer - focus is on balance between service and cost. Flexible: respond opportunistically and manage yield - focus is on providing creative solutions for a premium price. Incremental: relatively small innovation steps – focus is on managing risk.

Innovation Lead-Time (Innovation Response)

The above innovation matrix does however come with a caveat similar to the one for supply chain systems by Gattorna (2010). Most companies target ways of reducing innovation lead-time using approaches such as concurrent innovation processes and deployment of cross-functional innovation teams (Smith & Reinertsen, 1991), but in most cases this only reduces the innovation lead-time, it does not remove it. In other words, it is often advantageous to seek to apply an agile methodology as illustrated by figure 2 as a fast response provides an immense competitive advantage (James, Leiblein & Lu, 2013), but due to innovation lead-times this may not be possible.

An analogy to supply chain operation systems is again appropriate. Christopher, Peck and Towill (2006) argue that for supply chains the lead-time is an important factor in classifying the appropriate responses. By mapping supply chain lead-time against demand uncertainty it is generally accepted that a two by two matrix maps against different generic supply chain strategies: continuous replenishment, lean, agile and flexible (Christensen, 2011; Simchi-Levi, Kaminski, Simchi-Levi, 2006). This paper suggests that a similar matrix can be created for innovation strategies.

The mapping of the previously mentioned innovation methodologies would look as illustrated in figure 3. By combining the contextual variables of innovation lead-time and innovation clock-speed / innovation predictability into a matrix and map appropriate innovation methodologies the taxonomy in figure 3 emerges. The suggested research must confirm or reject the validity of the taxonomy.

Insert Figure 3 about here

Notice how figure 2 and 3 propose that it is possible to have different demand side expectations to the innovation response (figure 2) versus actual ability to respond (figure 3).

Innovation Types

Researchers have identified up to 12 distinct types of innovation (Sawhney, Wolcott & Arroniz, 2006), but beyond the archetypes of innovation: business model, product, market, process and service innovation there is no consensus (Keeley et al., 2013; Moore, 2004; Osterwalder & Pigneur, 2010; Sawhney, Wolcott & Arroniz, 2006). Recent publications by practitioners in regards to social innovation, marketing innovation (De Bes & Kotler, 2011), service innovation (Stickdorn & Schneider, 2011) and business model innovation (Osterwalder & Pigneur, 2010) suggest that innovation design thinking is indeed portable to other types of innovation than product innovation (Kelley, 2006; Silverstein et al., 2012). Nevertheless, the majority of past innovation research was conducted in technology dominated industries and focused on product innovation. Friedrich et al. (2010) conclude that there is little research that evaluates innovation leadership against different types of innovation and suggest that the inconsistency in innovation leadership research findings is caused because different innovation types are considered as one global phenomenon. They suggest that individual types of innovation should be studied independently in regards to innovation leadership. Similarly, Deschamps (2005) claim that for different innovation types, different innovation leadership styles are required due to influence of variables such as a) exploration versus exploitation innovation and b) top-down versus bottom-up innovation. It is therefore concluded that it can be expected that the innovation type greatly influence the leadership style for that innovation type.

Organisational Situation

It is well known that the organisational situation greatly influences the organisational strategy. Watson (2003, 2004) distinguishes between (i) start-ups, (ii) turnaround, (iii) realignment and (iv) sustaining success as requiring different strategies. In a (i) start-up situation the focus is on assembling capabilities to get a new business, product or project quickly of the ground. In a (ii) turnaround situation the focus is on changing direction and getting the organisation back on track rapidly as there is little staying power. Both require that decisions be made early and actions initiated.

By contrast (iii) realignments and (iv) sustaining success are situations in which the organisation has some stamina and there is time to react. Analysing cases like LEGO over time (Roberson & Breen, 2013) suggest that businesses should and do adjust their innovation type portfolio depending on the organisational situation. It is reasonable to assume that the organisational situation influences the innovation strategy through adjustments of the innovation portfolio (Moore, 2004).

RESEARCH METHODS

This section describes suggestions regarding how to research the impact of the contextual variables in regards to innovation strategies and leadership styles.

Contextual Variables and Innovation Strategies

It is suggested that a range of innovation projects within different companies are analysed and rated against the proposed contextual variables and the suggested innovation methodologies. For each of the projects the dominant leadership style can be researched using the Competing Values Framework (CVF) or similar. Secondly, it is suggested that patterns between innovation methodologies are correlated with the corresponding leadership style pattern.

Contextual Variables and Innovation Leadership Styles

An appropriate research method must be identified to capture innovation leader's style. The research method must be able to capture the response to the described innovation paradoxes and tensions (Andriopoulos & Lewis, 2003). The competing Values Framework would be an appropriate tool to research innovation leadership styles in different innovation contexts. Ideally the findings can be mapped onto the suggested taxonomies.

Quinn and Rohrbaugh (1983) and Quinn (1988) illustrate competing tensions and complexity faced by innovation leaders in the Competing Values Framework (CVF) model they developed. Quinn & Rohrbaugh (1983) investigated different leadership dimensions and most recently others have re-examined the basic structure of the Competing Values Framework and found support for the original structure of the framework (Belasen & Frank, 2008; Lawrence, Lenk & Quinn, 2009). Based on the dimensions Quinn (1988) identified eight managerial roles: innovator, broker, producer, director, coordinator, monitor, facilitator and mentor (Vilkinas & Cartan, 2006). DeGraff & Lawrence

(2001) extended the CVF to the subject of organising creativity that produces value. They particularly observed secondary dynamics of speed and magnitude of the creative practices and adapted the CVF as a model for innovation and named it the Innovation Genome (Degraff & Quinn, 2007).

CONCLUSION

Because innovation is a complex system it is suggested that the innovation system must be represented by multiple constructs. An appropriate innovation leadership model is proposed. This model is then used to illustrate important relationships between contextual variables, innovation governance, innovation leadership, innovation capability and innovation performance. It is then a) argued that innovation governance, innovation strategies and innovation leadership must be aligned to ensure optimal innovation capability and performance and b) argued that two taxonomies for innovation strategies can be developed to aid innovation governance, identification of appropriate innovation strategies and alignment with appropriate innovation leadership styles. It is suggested that the contextual factors of business architecture, innovation clock speed, innovation lead-time, organisational situation and the innovation type significantly influence innovation governance and innovation leadership. Firstly, combining the contextual variables of 'business architecture' versus 'innovation clock-speed' result in a demand side taxonomy for innovation strategies. Secondly, the combination of 'lead-time for innovation response' versus 'innovation clock-speed' results in a supply side side taxonomy for innovation strategies. Suggestions for research methods are included to identify correlations between contextual variables, innovation governance and in particular innovation strategies and the appropriate innovation leadership style. Whatever the findings, there will still be a need for innovation leaders imagination and experience to figure out what is best for an organisation under specific circumstances.

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FIGURES

Figure 1: Innovation Leadership Model

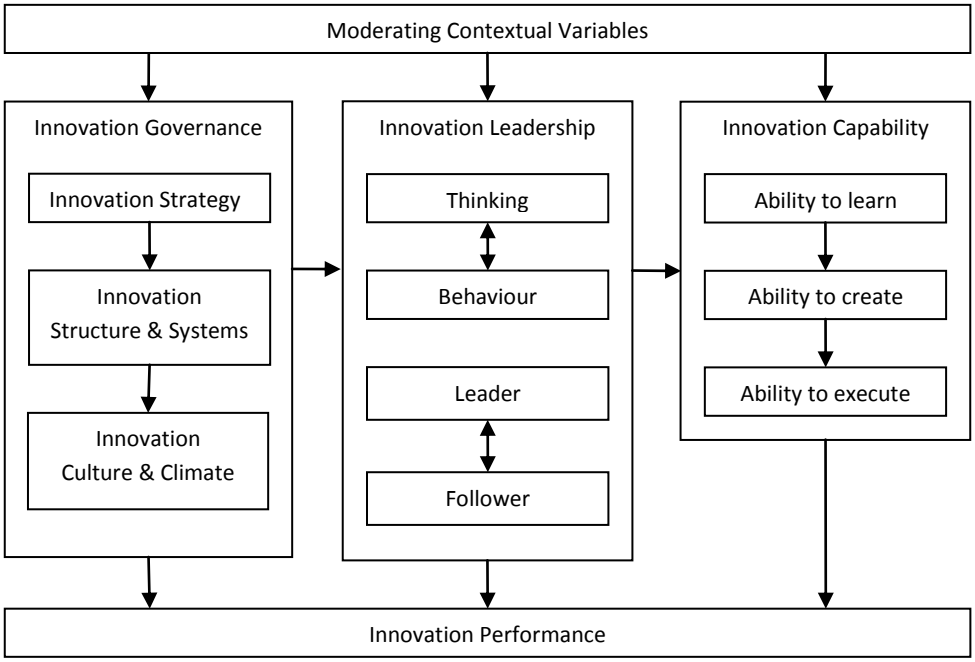
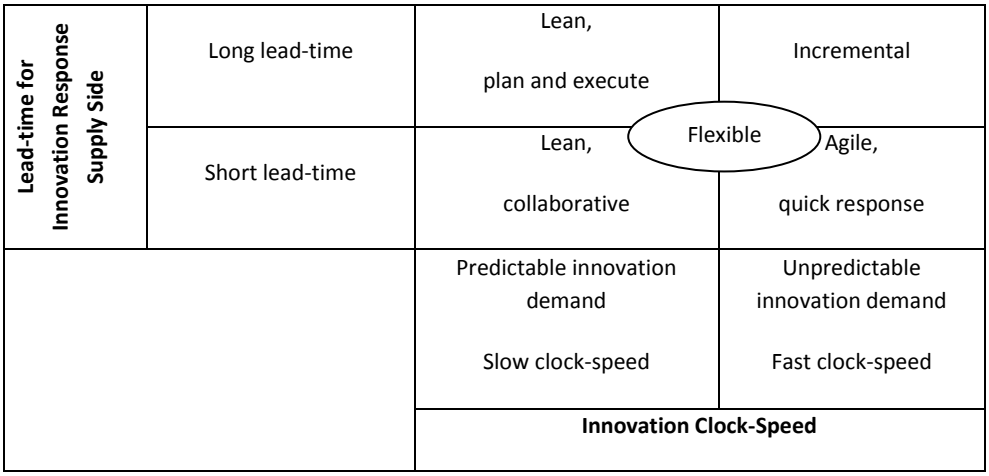


Figure 2: Business Architecture versus Innovation Clock-speed

Business Architecture Demand Side			
	Complex-systems business Tight customer relationship	Lean, collaborative	Flexible
	Volume-operations business Loose customer relationship	Lean, plan and execute	Agile, quick response
		Predictable innovation demand Slow clock-speed	Unpredictable innovation demand Fast clock-speed
		Innovation Clock-Speed	

Figure 3: innovation Lead-time versus Innovation Clock-Speed



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