Examining the Complexities Between Policy Development and Innovation

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Abstract. The policy environment has become increasingly complex over the past decades, adapting to shifts in society, economy, as well as showing more harmonization internationally. Simultaneously, the business environment has been shaped by emerging trends, technological advancements, and a steep increase in competition. Therefore, the ability to innovate and capture value, potentially disrupting an industry, is a significant success factor in achieving business growth and relevance. For those purposes, this paper aims to examine the complexities between policy development and innovation, by analyzing existing literature and supplementing it with a specific research, in order to establish a better understanding of the linkages between the macro and micro levels. Subsequently, this paper explores how outcomes of such interactions can be evaluated and decision-making processes, as well as strategies, adapted, in order to successfully navigate those complexities, whilst enhancing innovation capabilities.

Keywords: Policy · Innovation · Strategy · Knowledge · Management · Disruption · Growth

1 Introduction

As it is widely acknowledged that policy changes have a strong impact on organizations' business ecosystems, it is in the interest of policy makers, as well as organizations to better understand the macro and microenvironments which they are operating in. However, research is typically focused on either side, policy development or organizations and thus lacks to acknowledge the existing complex structures between policy development, innovation, and disruption. Since academic research often addresses specific policy designs to spur innovation, targets public-sector organizations, or focuses too strongly on technological disruption, the impact on organizations and other areas of innovation are often neglected. Therefore, a thorough examination of the complexities arising can help to better understand how changes in policies on the macro level affect and impact business organizations on the micro level. The manner in which different types of policy areas, or specific policies, are set out to achieve certain objectives has either indirect or direct impacts on different organizations. It could potentially benefit them or create challenges to growth, for example by affecting costs (hence less money for R&D, etc.), available human capital, or overall attractiveness of the industry. It is essential to highlight the difference between obligatory policies, requiring compliance to

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be delivered and reported on immediately, and 'voluntary' policy developments, which could potentially become obligatory in the future. For example, policies in sustainability have been gradually implemented for decades, but only started to apply more specifically in recent years.

2 Defining the Issue

As defined by Scott E. Page, complexities or complex systems consist of interdependent, diverse entities, which are assumed to adapt and respond to their local and global environments. He also emphasizes that their effects can partially differ on the macro and micro level, yet potentially "produce amazing novelty" [1]. In order to understand how innovation and disruption in organizations can be driven through actors, such as governments who produce policies, it is important to gain an understanding of various actors and their interconnections. In order to achieve bigger, long-term objectives, such as growth or development, governments (as well as organizations) can use policy priority areas as a main idea or plan as a basis of decision-making. This entails, that several smaller policy tools and areas set out, should ideally be in alignment and point towards a bigger goal. These can either take the form of compliance-requiring policies or voluntary policy directions, which are both informed by the macro level. In order to explore the linkages between public policy and firm-level innovations, it is important to conceptualize policies and priority areas on the macro level and explore their effects on organizations the micro level.

Referring to the Schumpeterian typology to describe innovation cycles on the macro level, it should be distinguished between inventions, innovations, and diffusion [2]. Whilst inventions are defined as novel creation of a product, process, even business model, their execution and use can be considered an innovation, which then goes through the process of diffusion by being adopted by more and more actors.

Since sourcing innovations and capturing value can be driven externally, as well as internally, and may require different amounts of resources, there have been several attempts to categorize different pathways and strategies for organizations to assess opportunities and enable them to create and capture value. As the need for inventions is driven by current or future problems, they could be mapped by level of clarity on the problem and domain. The Four Types of Innovation Matrix, differentiating between Basic Research, Breakthrough Innovation, Sustaining Innovation, and Disruptive Innovation [3]. Whilst these areas seem straight forward, in today's fast-paced and constantly changing business environment, organizations cannot only rely on engaging in R&D and basic research for example, but rather need to build agility, adaptability, and anti-fragility, in order to avoid the risk of disruption from new market entrants.

3 Importance and Discussion

Firms usually do not operate in a vacuum, they are rather predetermined or affected by market forces, forms of governance, social constructs, and other factors. Therefore, enterprises and organizations are exposed to different drivers of influence and ought to act within a certain frame, beyond competition and market forces. Nonetheless, industries of a country are not only influenced by other factors, such as policy, they also exert influence on politics. On one side, prevailing corruption in many developing countries shows effects leading to an overprotection of industry, making only economic and political elites benefit. On the other side, adequate policy development can be disruptive, foster innovation, and ultimately lead economic development and growth. It is therefore vital for nations to carefully set and review policies, in order to achieve such objectives.

Not only does innovation show more economic success in businesses, but it is also a key driver for economic success. Besides helping organizations to lower costs, develop more efficient processes, or creating new markets, consumers and society could draw benefits as well from living in an innovative economy. For that reason, the ability to innovate is a key determinant in the competitiveness of companies, as well as countries, towards operating at the top of knowledge.

For example, R&D is typically very time- and resource-consuming, making it unfeasible for businesses to invest in it. However, this could be re-directed through policies, providing access to government-funded research. This simple example of how macroeconomic actors exert influence over the market, supporting research and competition, can show different effects on different companies on the micro level. However, economically this would be below the optimum, as organizations should be able to navigate their business ecosystem and innovate, without direct investments or subsidies from governments, due to the risk of system or market failures. Since governments are financed through quality of innovations, in order to achieve economic growth and wealth [4]. Therefore, governments can support business innovation through various policy tools, ranging from loans or taxation to setting standards or making international agreements.

Although policies should aim to create favorable business environments, allowing organizations to prosper and secure competitive advantages, for example by entering free trade agreements and enabling organizations to enter foreign markets more easily. They could also pose threats or destroy competitive advantages, by setting limitations or restrictions, forcing organizations to either adapt or circumvent such threats.

Whilst policies can directly or indirectly support innovation, consequentially creating opportunities for organizations to capture new value, they can also destroy or restrain the functioning of the current business ecosystem, and current competitive advantages. It should be acknowledged that failures to spur innovation can be due to ineffective policies or due to threats policies might pose to specific firms, as the value of their knowledge/innovation-related activities gets limited or diffused, leading to the diminishing of their competitive advantage. Usually, limitations on organizations' business ecosystems force them to either adapt to that changing environment or circumvent those limitations, for example by moving abroad, as it has been the case with Germany's biotech industry, where ambitiously high standards and costs caused organizations to increasingly outsource production.

This entails that any form of innovation requires knowledge, whether it be the in the form of information, skills, resources, et cetera. The nature of this simultaneously also accelerates the contagion process, creating more competition amongst industry players. Therefore, one could argue that when conceptualizing policy inputs, organizations pose as a form of mediator between policy inputs and innovation outcomes, making company's decisions in relation to policy inputs a detrimental part of the complexities between policies and innovations or disruption.

The understanding of the term knowledge is not limited to information an entity has, but it can also include its resources, capabilities, network, and other factors which can provide value. In that sense, improving the gathering, processing, and sharing of knowledge within the organization, or through external collaboration or diffusion is essential for companies to identify and seek out value.

Although it is highly discussed where the right balance between invention, innovation, and diffusion lies, companies should also take into consideration the amount of competition, and innovation-related collaborations, they have. In the sense of open innovation, collaboration across industries, sectors, or borders is considered effective, as the flow of knowledge gets increased. Simultaneously, this allows organizations to increase their innovation abilities. The Red and Blue Ocean Strategy essentially adds this by describing how companies can move from a highly competitive environment to a new market with high potential for growth, created by their disruption.

In order to do so, recent papers emphazise being considerate of various aspects, including company and geographic culture, in order to increase the flow of knowledge and ideas within the organization. There are several models and frameworks suggesting different approaches. Nonetheless, it would be very valuable for organizations to quantify policy signals, in order to be able to gather more information on policy and consequent market conditions for innovation, in order to develop and perform highlighted abilities. Some authors argue that geopolitical events can impact organizations just as much as policies, suggesting a sort of corporate foreign or government policy center to monitor the geopolitical and policy landscape.

It must be noted, that "some policies and incentives influence all businesses equally", [whereas] others affect startups and incumbents quite differently" [5]. It is usually larger organizations, who have the resources and capabilities to strategically react and adapt to policy changes, as well as influence them, and to make investments towards multiple forms of innovation.

Moreover, the linkages between policy and innovation are not one-sided, as stakeholders partaking in policy design include respective industries as well. This means that large organizations can use their power and influence to establish contacts to politics through lobbyism, alliances, and even corrupt measures to co-determine policies vice-versa.

4 Data Analysis and Findings

A single company has little influence over global macroeconomic and geopolitical developments. It has to carefully navigate such complex environments and give consideration to possible changes and their impacts. Therefore, an unsuitable regulatory environment can be burdensome and unpredictable, harming industrial competitiveness and diffusion of knowledge. Furthermore, the significance of political security and a stable legislative environment might be vital for business, as foreseeability and certainty would reduce many potential risks. When operating in less regulated and more volatile markets, an increasing number of concerns might arise, for example when having to enter joint ventures with Chinese parties, the question of who owns certain technologies or know-how might raise issues.

Although impacts cannot be measured precisely, impacts can vary in severity on the ecosystem. Therefore, political security can create the foundation for a suitable legal and business environment, as uncertainties and risks are strongly reduced, whilst competitiveness and diffusion of knowledge can prosper. Different policies can impact the ecosystem, including suppliers, production, or customers, differently. Therefore, policies ranging from infrastructure, education, and labor might impact the resources and capabilities of the company. Whilst minor impacts or unfeasible policy suggestions require action, they can also be impacted by the company through lobbying and representation in stakeholder groups. Whereas policies with a long-term impact are more essential to the core business/operations, and require action in the form of strategy, growth, and innovation-focus adaption.

Contact to politics can hugely impact policy making and set a direction for governments, as well as organizations. Having a communications and government relations department, companies can regularly seek the conversation. Moreover, being a member of trade associations, bodies, and groups, representing the interests of the industry, as a major stakeholder, allows a company to stay ahead of policy making, and assess risks timely, in order to turn them into opportunities.

However, most large organizations are typically slower in reacting to trends and innovations, due to longer, more complex decision-making processes and long periods to bring products to the market. Therefore, market intelligence tools and better industry forecasts might be an area of increasing importance. Still, sometimes start-ups or established companies capture new value in very specific niche markets, which either fail or grow to potentially disrupt incumbents. Therefore, a valuable possibility could be to collaborate with or acquire that company to gain access to its know-how, technology, etc.

Innovation priority areas which are in alignment with policy priority areas, as well as with social responsibilities, seem to prove more successful to achieve set objectives. This allows the core business to draw opportunities beyond immediate impacts, including brand reputation, for example. Often, accusations from NGOs or the media could influence public opinion, which might further have impacts on customer relations or employee satisfaction and retention. This highlights that moral or social responsibilities play an increasingly important role, which might strengthen a business case/competitive advantage in the future, as voluntary policies manifest into obligatory ones.

To exploit opportunities and mitigate risks, there are several systems and approaches to apply. This research highlights that to capture value and create opportunities, internal and business model innovations can play an important role. For opportunities to become feasible a proactive, customer- centric, problem-solving approach can be essential, yet also pose a challenge to large organizations with long decision-making processes and time to market. It is suggested to solve this through more market intelligence and accurate forecasts. Opportunity gaps can also be captured internally, through human capital and employee involvement. However, external knowledge acquisitions can spare internal capacities and resources, as expertise can be shared through cooperation and collaborations with industry and academia. In the case of potential disruptors in specific markets, an effective strategy could be to acquire knowledge through strategic M&As.

5 Recommendations

Policies, alongside other factors, essentially represent a major force impacting the climate of the business ecosystem. Thereby creating threats or opportunities for different actors, limitations or possibilities to generate or capture value can lead to the loss/gain of a competitive advantage. Alignment of policy priorities and innovation priorities can allow companies to successfully build gradual success and growth. Specific strategies to anticipate policy developments and identify potential threats/opportunities are firm-specific and should contain the firm's objectives to generate value and gain competitive advantages. However, there are plenty of strategies to assess those factors, depending on products, industry, or business model.

Externally, collaborations and participation in political debates or trade and industry bodies, can allow the sharing of knowledge in several ways, as well as grant influence of future impacts to a certain extend. Internally, capabilities and resources, such as human capital, and company structures and management processes majorly affect the pace of decision- making to be proactive, rather than reactive, and the success of innovation and growth achieved.

The graph below attempts to illustrate the key linkages between the policy environment and the organization's internal environment. In the context of social network analysis, this model identifies major actors and their interactions. Therefore, it is suggested that the knowledge of such interactions should be applied to a future-proofing approach, in order to better anticipate and predict outcomes of such interactions. Stakeholders could gain a better foundation for their decision-making processes, evaluate future impacts, and adapt accordingly [6]. (Fig. 1)

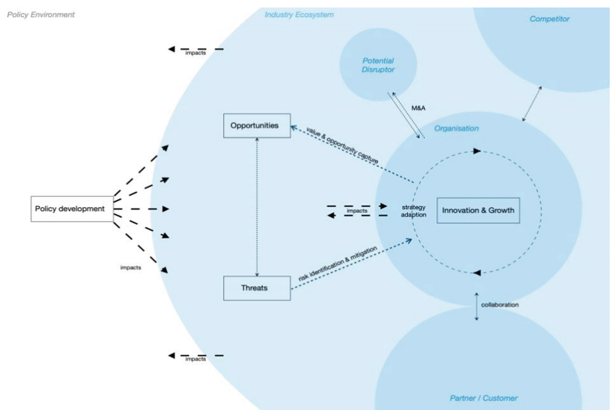

Fig. 1. Future-proofing network model.

Since policies, especially priority areas are set out to achieve long-term objectives, larger trends and shifts are taking place gradually. For that reason, organizations should consistently monitor and adapt their strategy and operations towards reaching their own innovation and growth objectives in the long- term. In doing so, internal resources, human capital, assets, etc. should be utilized as efficiently as possible. It could therefore be suggested that the internal structure of networks is liberalized to facilitate the flow of knowledge. This can achieve greater successes in producing incremental and radical innovations. Several strategies and models portray possible internal structures to enhance the organizational structure and network, by engaging every stakeholder of the organization. Potentially a similar approach towards the external business ecosystem could be further beneficial: enhancing networks within the business ecosystem, ranging from academia and research to engaging with customers, partners, start-ups, competitors, and alliances in relevant industries. Therefore, it is recommended to strengthen bonds with partners to drive collaboration, as well as knowledge-sharing and diffusion, possibly gaining more knowledge from acquisitions, especially to reduce the threat of potential disruptors in the industry.

Moreover, large organizations have certain capabilities and resources, as well as economic power, which they should utilize to express its interests. It should therefore join alliances or industry bodies to represent its interests and even co-impact the development of future policies. For that purpose, it is recommended to implement certain structures or systems facilitating that, such as a communications and government relations department, or even a foreign policy to address growing political and geopolitical uncertainties. Beyond that, it should be noted that different actors might be affected very differently. However, in order to better achieve desired objectives, from a policy perspective, as well as to develop a prosperous business ecosystem, a mechanism should be created, which allows for feedback from the entire industry on the micro level back to the macro level. Moreover, large organizations have certain capabilities and resources, as well as economic power, which they should utilize to express its interests. It should therefore join alliances or industry bodies to represent its interests and even co-impact the development of future policies. For that purpose, it is recommended to implement certain structures or systems facilitating that, such as a communications and government relations department, or even a foreign policy to address growing political and geopolitical uncertainties. Beyond that, it should be noted that different actors might be affected very differently. However, in order to better achieve desired objectives, from a policy perspective, as well as to develop a prosperous business ecosystem, a mechanism should be created, which allows for feedback from the entire industry on the micro level back to the macro level.

Beyond legal responsibilities, social responsibilities can be highly impactful to the business, and potentially allow to gain more opportunities to capture value. This could be achieved by staying ahead of policy and leading the industry with ambitious goals in strategy. It should be of value to the organization to implement this not only in strategy and its outputs, but also its internal structure and processes. Organizations should operate with transparency, enhancing the flow of knowledge internally, thus agility and anti-fragility. Especially in large organizations this could also accelerate the time of decision-making processes as required information could be gathered more effectively. Talking of which, making investments and applying tools to improve market intelligence and data analytics. As those are increasingly gaining significance and momentum, they could decrease uncertainties, as well as allow companies to better understand the developments within their ecosystem. Part of that would be applying such tools to quantify policy signals accurately.

6 Conclusion

It would be of value to not only explore those linkages and strategies in qualitative and quantitative research, but also to further test the suggested 'future-proofing network model'. By making further improvements to it, and putting into relation with a social network analysis, which essentially aims to explain the structure of interactions between various actors and interest groups during policy-making processes, in order to anticipate future decisions and outcomes. The model could significantly gain value and relevance to organizations, as well as researchers and policy makers to better understand and portray the development of linkages and potential changes within the business ecosystem.

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