

Strategic choices made by managers in startup clusters

The scope of research presented in this doctoral dissertation is focused on strategic choices made by managerial cadres of startup enterprises operating in the specific environment of startup clusters. The central objective of this study is the distinctive triad of: startup cluster, startup enterprise, and startup manager.

In accordance with the broadly adopted definition by M. Porter, a business cluster represents a „geographic concentration of interconnected businesses, suppliers, service providers, representatives of related sectors, and associated institutions (such as universities, normative and regulatory bodies, and sectoral associations) in specific economic segments, involved in mutual cooperation and competition. Clusters of critical mass (evidenced by the number of entities and other institutions required to produce the agglomeration effect) holding ample competitive advantage over others in the specific segment of their operation can be seen as a striking property of nearly every national, regional, district or even municipal economy, particularly in the developed countries”¹. Due to the variety of cluster types observed in modern economy, no universal definition of such a cluster formation can be reasonably provided. For the purpose of this dissertation, the author decided to adopt a definition of a business cluster as a network of entities representing associated segments, operating in a dedicated location, associated through a structure of formal and informal relations, and joined by the defining property of the co-optation effect. This approach serves to underline the broad variety of entities operating within business clusters. In addition, it may be useful to emphasize the context of relations (both formal and informal) formed and maintained by the managing personnel of such networks.

For research purposes, it was also assumed that startup clusters (as clusters formed with the intention of supporting and stimulating the development of startup entities) represent spatially (or geographically) concentrated groups of organizations, including local startup entities representative of the same or associated segments along with other bodies, such as business support institutions and R&D units, joined by a network of vertical and horizontal

¹ Porter, M., E. (1990). *The Competitive Advantage of Nations*, Free Press, New York.

relations, and involved in mutual competition and cooperation. Examples of startup clusters include technology parks, tech hubs, high-tech centres, technopoles, academic clusters, and other cluster structures supported by incubator- or accelerator-type facilities.

The business spectrum of such clusters is mainly associated with innovative projects at early stages of development, intent on finding a scalable business model and opportunities for rapid growth. Startup enterprises, as model examples of this approach, are presently the most popular form of business activity focused on innovation. Thus, for the purpose of this dissertation, a startup entity is defined as an innovative enterprise at an early stage of development, intent on finding a scalable business model and opportunities for rapid growth. The most universally recognized attributes associated with this type of enterprise include: the use of modern technologies (particularly information and communication technologies), short span (typically up to 5 years of effective operation); exploration or utilisation of a scalable, reproducible and profitable business model; high-risk operation; and emphasis on rapid growth.

Observations and findings from critical studies of literature broadly related to the concepts of clusters, startup enterprises and strategic choices made by startup managers, along with own empirical explorations conducted over the course of three editions of the Startup Academy postgraduate study programme involving panels and discussions with numerous representatives of startup organizations revealed a large cognitive gap in relation to strategic choices made by managers of startup enterprises operating in the context of startup clusters. For this purpose, the author adopted a definition of strategic choices as decisions producing long-standing and fundamental effects for the organization, particularly in relation to business objectives and building the startup value.

Consequently, the cognitive gap was described by the lack of knowledge on effective strategic choices (properties of the decision-making process, its forms, and determinants) made by managers of startup enterprises operating in the specific context of cluster-type networks produced by (or in support of) local startup enterprises.

Lack of this type of knowledge is particularly severe in the context of the ongoing development of economic theory and business applications in the analysed area, and the resulting discrete character of the growing maladjustment between theory and practice. Another important argument in support of the study objective is the growing significance of startup environments and the key role of strategic choices made by its various actors, including owners and managers of startup organizations and other personnel responsible for key decisions. However, no comprehensive studies have been conducted thus far to examine the phenomena specific for startup cluster environments. The most significant research gap can be observed in

relation to strategic choices made by managers of startup enterprises operating in startup clusters.

One of the main objectives in the postulated exploration is the identification and categorization of determinants influencing some of the typical strategic choices faced by managers of startup enterprises, with the intention of increasing the effectiveness of such decisions.

Thus, the main objective of this dissertation is the effective identification of properties of strategic decision-making process, forms (types) of strategic choices made in this context, and determinants of the most effective strategic choices made by managers of startup enterprises operating in the specific context of startup cluster formations. The author places main emphasis on analysing strategic choices, defined as decisions producing long-standing and fundamental effects for the organization, particularly in relation to business objectives and building the startup value.

In addition, secondary objectives were defined as follows:

- cognitive objective: designing a cognitive framework of strategic choices made by managers of startup organizations operating in startup cluster environments,
- methodological objective: designing new instruments for the analytical evaluation of strategic choices made by managers in clusters, particularly in startup clusters,
- practical objective: designing recommendations for effective approaches to strategic choices made by managers in startup clusters.

The main research question was formulated as follows: which properties of strategic choice processes, which forms and which determinants can be seen as crucial for making effective strategic choices by managers of startup organizations operating in startup clusters?

Based on the above, the following detailed questions were construed:

- What properties define modern clusters?
- What properties define modern startup enterprises?
- What properties define modern startup clusters?
- What are the strategic choices made by managers of organizations operating in startup clusters?
- What properties define the structure strategic choice processes employed by managers of organizations operating in startup clusters?

- What types of strategic choices are made by managers in startup clusters?
- Which determinants can be seen as decisive for strategic choices made by managers of organizations operating in startup clusters?

The target of research presented in this dissertation consisted of selected managers of startup organizations operating in startup cluster environments.

The research procedure employed in this study was structured as follows:

1) Conceptual phase:

- critical evaluation of professional literature on the subject, with the intention of revealing a cognitive gap,
- formulation of the main research problem,
- formulation of research objectives,
- formulation of research questions,
- preparation of a detailed procedure for the empirical phase.

2) Empirical research:

- design of research instruments (questionnaires),
- defining a research sample to be used in surveys,
- realization of the survey based on the previously established questionnaires,
- analysis and evaluation of survey research findings,
- organization of the findings and determination of practical recommendations for improving the effectiveness of strategic choices made in startup clusters.

This dissertation is organized in five chapters. Chapter one presents the theoretical framework of the cluster concept based on critical literature studies. For research purposes, clusters are described in the strict context of management sciences. From this perspective, cluster characteristics are associated with the form of cluster organization, management methods, the roles of participant entities, and operating effectiveness – both at the level of individual entities and the network as a whole. Special attention was placed on competences that may develop in cluster-type formations.

This author's approach is closely related to the network paradigm, with its view of clusters as networks of relations and spatial arrangements designed to support innovative models of cooperation, as the main focus of this research.

Another important aspect in defining the concept of cluster is the characteristics of its immediate environment as a source of cluster development potential. On the other hand, clusters themselves have a positive impact on development of local communities and regions. Lastly, the regional dimension bears close associations with other forces that determine cluster formation processes.

Major focus was placed on the Triple Helix model (by L. Leydesdorff and H. Etzkowitz)² postulating that the operation and organization of relational networks between organizational units of the governmental, academic and industrial structures forms a basis for optimal cooperation. Spatial arrangement of such entities supports the development of hybrid organizations, in the form of business incubators and other business support institutions. In modern settings, these organizations tend to interfuse, meaning that their operational involvement is rarely restricted to their fundamental roles, with propensity to integrate areas of competence which are outside their designated role.

To gain better understanding of the notion under study and to emphasize other important perspectives of approach in the analytical evaluation of the studied networks of cooperation, clusters were also described from the viewpoint of economic sciences, sociology, and law science.

From the economic perspective, clusters represent key instruments employed in regional support and development. With the advance of modern cluster-type formations, special attention was also placed on their development potential as a source of competitive advantage of entire nations. Lastly, structures of this type may also improve the competitive advantage of organizations active on a supra-regional level.

The social science perspective allows for analysis of clusters from the viewpoint of human participants involved the operation of such structures. Clusters form an environment for the organization of human activities. Another important aspect is the emphasis on constituent elements of such structures and determinants of their operating approach. Lastly, proper attention was placed on trust and bond formation processes within clusters.

With regard to the evaluation of the legal perspective, the author attempted to identify regulations that may apply to the operation of cluster-type formations. Polish legislature lacks clear definition of clusters as legal entities. However, the notion itself is formally identified in

²Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university–industry–government relations. *Research Policy*, 29(2), pp. 109-123, doi.org/10.1016/S0048-7333(99)00055-4, (date of access: 1.02.2020).

a number of legal documents. This section provides details of any such documents that may, to the best of this author's knowledge, be effectively applied to the studied notion as such. References were also made to other governmental and EU-level regulations as well as those formally employed by other organizations and institutions with reference to cluster-type formations. Proper focus was placed on characterizing formal principles for the classification of Key National Clusters.

Further sections of the chapter provide an overview of various classification methods and forms of clusters. Formal classification of clusters seems indispensable due to the wide differentiation of cluster-type structures observed globally. Professional literature provides no definite approaches to formal classification of different types of clusters; the author made sure to include a broad selection of classification methods postulated with reference to the studied area. These are followed by characterization of stages in cluster development – this aspect is also widely addressed in professional literature, providing a number of interesting approaches to the subject at hand. From the viewpoint of the survey questionnaire, it may be useful to employ one of the most popular distinction of stages in cluster development: embryo, growth, maturity, and decline. The first stage represents the formation and nascence of a cluster. The stimuli for cluster formation may take on a bottom-up approach (such as in the case of clusters formed on the initiative of local organizations cooperating for such purpose). The next stage represents a growth phase, complete with negotiation and establishment of joint operating standards, roles and obligations between participants. With an inflow of new enterprises, the structure reaches maturity, described by shared knowledge and formal structures of organization. Stabilization ensues to a point where the cluster reaches its decline stage, characterized by disturbances in cluster fundamentals, and followed by gradual reduction of cooperation, conflicts, and the resulting decline of trust between participants. For a cluster to remain effective, major focus at this stage should be placed on stimulating the involvement of individual participants³. This is the only viable way to establish a revival phase, or reiteration of the above circle⁴.

In addition, chapter one presents evaluations of sources of benefits for clusters and for cluster participants. Due to the wide range of profits available, clusters remain a popular solution

³Ejsmont, A., Klemens, B., & Moczyła, A. (2016). *Klasy: kooperujące i konkurujące organizacje sieciowe*. Texter, s. 20.

⁴ A Practical Guide to Cluster Development. A Report to the Department of Trade and Industry and the English RDAs by Ecotec Research & Consulting, London. (2014), pp. 11-12, <https://bluetongue1.files.wordpress.com/2008/04/2004-a-practical-guide-to-cluster-development-uk-dti.pdf>, (data dostępu: 15.09.2020).

for many actors on the market. For this reason, new clusters are formed in various sectors and regions, while the existing ones are subject to constant improvements. On the one hand, clusters may gain profit in ways available for traditional (conventional) enterprises. On the other hand, through their network organization, they may also benefit from properties characteristic for this type of cooperation.

The final section of chapter one provides information on methods used for examination of cluster-type formations. Clusters have been studied extensively; due to the broad distinction of cluster forms, these studies adopt many varied methods and instruments which are typically adjusted to suit the needs and interests of specific sciences. Since this study is rooted in management sciences, the author decided to confine the analysis to some of the most popular research approaches used in relation to this particular aspect of cluster operation. These are most often conducted from the perspective of organization networks.

Chapter two discusses the most important traits and characteristics of startup clusters. In response to the growing significance of startup formations in modern economies, research interest naturally shifts to analyses of support structures which serve to stimulate processes of startup growth and development. Hence, the initial section of the chapter presents an overview of startup theories adopted in management sciences, developed on the basis of literature studies. This section emphasizes the particular roles played by these formations in national economies. At the same time, major emphasis is placed on practical approaches to the characterization of the startup notion, as used by the most prominent representatives of management sciences. Selected definitions of a startup as a notion are presented based on literature studies, and supplemented by definitions used in various reports available for the studied segment. While many such reports are produced for purely diagnostic purposes, some of them are also intended to provide recommendations and formulate conclusions for the effective development of the existing startup structures and for improvement of conditions stimulating the formation of new startup enterprises. In addition, definitions of startup enterprises are presented as used in startup contest regulations, together with detailed evaluation of platforms involved in identification and systematization of startup-related information. Proper emphasis is placed on the fact that this type of involvement is not properly addressed in national legislation.

Inadequacies of startup research instruments are emphasized. Further attempts at systematization of the notion may contribute in the development of knowledge in this area of expertise.

In view of the present trends and directions of startup development and in response to the increased interest in this type of enterprise, new methods and management techniques were

devised. Chapter two presents a broad selection and evaluation of such techniques and instruments as:

- Customer Development,
- Lean Startup,
- Business Model Canvas,
- Running Lean,
- Lean Analytics,
- Agile Software Development,
- Design Thinking,
- Agile Management,
- Pivot.

Later sections deal with various approaches to the analyses of startup lifecycle. This aspect is of particular importance, since references to various stages of startup development are present in the research questionnaire. Various approaches to stage classification are discussed, with focus on properties specific for the startup segment and on the varied contexts of their description, such as: running a business characterized by specific properties, running a business at an early stage of development, or in the context of organizational values.

In this author's opinion, the most interesting approach to startup lifecycle can be derived from the economic practice and is already used on the Startup Commons platform. It is based on a six-stage model of a startup lifecycle: ideating, concepting, committing, validating, scaling, and establishing. The initial stage involves ideation of the planned business concept, complete with initial determination of future customer values offered by the startup. The concepting stage involves definitions of milestones, mission, vision, and initial strategy. The committing stage represents the onset of production, to be validated in the next stage. The scaling stage is described by emphasis on KPIs (Key Performance Indicators), but also by focus on customer base and prospects for revenues. This is a stage of particularly rapid growth. The final stage (establishing) involves strategic decisions related to future directions of the startup development. At this point, the startup enterprise is mature enough to attract new stakeholders and new sources of external financing⁵.

⁵www.startupcommons.org, (data dostępu: 23.03.2020).

This section is followed by a description of startup clusters and processes responsible for their formation. Major emphasis is placed on co-optation as a specific property of a startup cluster. This section is formulated on the basis of literature studies and case study analyses.

The most popular forms of startup financing are presented, including:

- crowdfunding
- business angels
- venture capital
- grants and subsidies
- loans
- own resources.

Emphasis is also placed on the necessary adjustment between sources of financing and stages in startup development.

Aside from financial assistance, startup enterprises may also benefit from sources of non-financial support. This aspect is of particular significance for budding entrepreneurs, as it often involves mentoring and practical assistance to help them decide on a business model and support them in decision-making challenges. Other forms of assistance include training sessions or access to dedicated training facilities. These are intended to support startup operation, provide infrastructure, or offer assistance in a range of practical duties. Non-financial support helps budding entrepreneurs avoid some of the typical oversights and mistakes, thus improving their market effectiveness. The most popular forms of non-financial assistance include: incubators, accelerators, co-working spaces.

Incubators may serve their role also at the pre-incubatory stage, i.e. by supporting nascent ideas and bringing them to fruition. Incubation as such is only used with reference to formally registered enterprises. Here, support comes in the form of practical assistance related to business operation, infrastructure, or training⁶⁷. Accelerators represent a form of specialist training programmes addressed to startup enterprises and designed to facilitate their development. Co-working spaces are another type of support; these may be offered as part of

⁶Marszałek, A. (2009). Inkubatory przedsiębiorczości jako katalizatory wzrostu w regionie, e-mentor, nr 4(31), ss. 19-26, www.e-mentor.edu.pl/_pdf/ementor31.pdf#page=19, (date of access: 18.01.2021).

⁷Białek, R., & Nowak, R. (2018). Uwarunkowania rozwoju startupów w Polsce. *Zeszyty Naukowe WSEI* seria: Ekonomia, 15(1). ss. 63-79.

incubators and accelerators, or as independent facilities where business customers may rent office space, a desk, or a conference room⁸, often on preferential terms.

In light of the large global diversity of forms and manifestations of startup enterprises, professional literature provides a wide selection of approaches to their classification. Startup organizations may be classified by segment of operation, by customer segment, or by their business objectives, to name a few. Chapter two presents selected approaches to startup classification and their most often recognized forms, based on literature studies.

Many startup enterprises choose to participate in networks for the benefits offered by this type of cooperation. Clusters represent one of the available forms of such network formations; startup clusters are a form of shared space designed to support, sustain, support the development and largely improve the market potential of budding enterprises. Startup clusters come in many forms, including: technology parks, tech hubs, high-tech centres, technopoles, academic clusters, incubators, and accelerators.

Later sections of chapter two are devoted to presentation of the formalized research process for the study of the nature of startup clusters. It involves comparative analyses of findings obtained on the basis of information published on websites of selected clusters. Analyses of the studied clusters' main objectives were based on disclosed mission, vision, and objective statements as well as the range of participation benefits offered by each studied entity.

In light of the above considerations, the author arrived at a conclusion that these clusters place particular attention to practical support for the operation of startup entities and the cluster as a whole, with major emphasis on innovation. Such activities may be approached through cooperation with other units and organizations (including governmental institutions and R&D units) and creation of new jobs. This approach provides benefits and development opportunities not only for the cluster, but also for the whole region. Detailed objectives indicate the broad interest of the studied clusters in building and reinforcing local communities. Another important aspect is the provision of access to resources and broadly defined infrastructure as well as training and advisory support services. These organizations are clearly responsive to the needs of startup enterprises, with profiles adjusted to the structural and objective characteristics of the participants, both the startup enterprises and the associated organizations, such as business support units, R&D centres, and governmental bodies.

Stages in startup cluster development are described in the context of bottom-up and top-down processes. Examples of studies are presented regarding cluster spatial situation contexts.

⁸Grycuk A. (2019), Wybrane narzędzia wspierania startupów w Polsce, *Studia BAS* 2 (58), ss. 153-181, /www.ceeol.com/search/article-detail?id=793140, (date of access: 18.01.2021).

Later sections address the notion of co-optation as a property specific for startup clusters due to their characteristic patterns of cooperation between competing entities. Benefits from participation in clusters are also characterized, including access to startup financing sources, talents, mentoring, knowledge, positive image, and recognition through being part of an established network.

Chapter three of this author's dissertation presents findings from critical studies of professional literature published with regard to strategic choices in startup management. Initial sections of the chapter provide characteristics of the various identified descriptions of decision-making processes made in this context, particularly those of strategic dimension.

A preliminary list of strategic choices considered crucial for the purpose of this study was established.

Strategic choices made by startup enterprises may reflect the following main concerns:

- form of business activity,
- change of business activity,
- determination of responsibilities of the managerial personnel,
- forms of financing,
- change of financing model,
- selection of a business model,
- change of business model,
- pivoting (shifting to a new strategy),
- defining launch dates for products,
- selection of market or entry to new markets,
- going public,
- joining a startup cluster,
- joining a startup support organization (incubator, accelerator) outside the cluster structure,
- joining a network other than a startup cluster,
- decisions to outsource,
- internationalization,
- introduction of new products,
- determination of business exit strategies.

Within the strict context of cluster participation (or intention to do so), strategic decisions may involve the following:

- formation of a cluster,
- forms of cluster operation,
- forms of cluster financing,
- participation in the cluster council,
- admission of new participant entities,
- cooperation with R&D centres within the cluster,
- cooperation with other startup entities within the cluster,
- joining a shared project within the cluster.

Focus is placed on presentation of determinants influencing strategic choices; these are collated in a comprehensive manner and segmented into five categories:

- manager,
- startup,
- cluster,
- immediate environment,
- external environment.

Factors related to managerial cadres include: experience, education, emotions, mood, intuition, risk attitude, personal traits, motivation, value system, confidence, and time management approach. Together, they form a complex analytical space for accurate characterization of individual decision-makers in the analysed startup clusters.

Startup potential for development was characterized by the following factors: organizational structure, organizational culture, atmosphere and climate, motivation system, employee recruitment and selection system, team heterogeneity, access to internal information, access to external information, the use of modern analytical decision-making support systems, external support for decision-making processes, delegation of authority to make strategic choices, availability of financial resources, and current stage of startup development.

Strategic choices made by startup entities are also influenced by properties of the startup clusters they choose to participate. These include the following factors: cluster size, organizational structure, form of organization, access to internal information, stage in cluster

development, availability of scientific support units within the cluster, availability of incubator-type units, quality of infrastructure, and the cluster's organizational culture.

The impact of immediate environment is characterized by elements described in Porter's Five Forces model, while the impact of external environment should also consider specific dimensions (groups of factors), namely: political and legislative, demographic, technical and technological, economic, cultural, and natural.

Based on the above, the author developed a proprietary diamond model of determinants of strategic choices in startup clusters.

On the fundament of critical literature studies described in chapter two, the author developed a set of basic determinants of strategic choices in startup clusters, which served to determine practical construction of surveys and provided a framework for their examination in the studied setting.

Chapter four reflects the methodological aspects of the study, with description of research procedures and research instruments. The survey questionnaire form is ordered in three segments:

- The first segment contains filtering queries designed to ensure that respondents fit into the categories of properties identified for the purpose of the study.
- Questions in segment two were separated into five sets. The first set contains preliminary questions, and is followed by sets of detailed questions in the following areas: properties of strategic choice processes, types of strategic choices faced by managers in relation to startup clusters, determinants of effective strategic choices made by managers of entities participating in startup clusters.
- The final set of questions was designed to reveal additional properties of startup entities, clusters, and managers for further analyses.

Further sections describe criteria for selection of research samples and their properties for the purpose of the survey study of strategic choices made by managers in startup clusters. Based on the findings, the author characterises the properties of startup enterprises, startup clusters, and managers in the studied sample of entities.

This section provides also details of one of the most important outcomes of this study, namely: the proprietary instrument for analytical evaluation of strategic choices made by managers, in the form of research survey questionnaire, complete with diagnostic methods for the examination of process properties, forms, and determinants of effective strategic decisions made in startup clusters.

The proper study was conducted by IMAS International, Ltd., using the CATI method. A database of prospective respondents was established for the purpose, as the author was unable to gain access to the already established formal database of managerial personnel employed in startup clusters.

Chapter five provides description and evaluation of the findings obtained from empirical studies, complete with identification of process properties, forms of strategic choices, and determinants of strategic decisions made in startup clusters.

The empirical findings, in turn, allowed for the formulation of practical recommendations of effective strategic choices made by managers in startup clusters, addressed and useful mainly to the managerial personnel of startup enterprises. The recommendations are arranged in four sets:

- the basic set of recommendations targets managerial cadres of startup enterprises operating in startup clusters. This set is produced on the basis of analytical evaluations of empirical findings,
- a set of recommendations for managers of startup clusters and business support institutions involved in propagation and development of startup projects. This set is produced on the basis of analytical evaluations of responses collected from this segment (presented and detailed in chapter five), as the findings were indicative of certain deficiencies in those startup cluster operations which are directly related to practical support of startup activities,
- a set of recommendations for law authorities and policy makers for the effective reinforcement of institutional aspects of the national support for cluster and startup initiatives.

Scientific examination of startup operation in cluster-type structures contributes in the development of effective economic practice; implementation of recommendations formed on the basis of empirical findings may prove beneficial for such entities, and thus improve the overall condition of the national economy. On the other hand, the business practice provides a fundament for the development of theoretical knowledge. In effect, the scientific and the practical aspects act in tandem, permeating and complementing each other.

The most important contributions of this research, in the author's opinion, include the following:

- formulation of a theoretical framework for the analytical examination of clusters, startup enterprises, startup clusters, process properties, and determinants of effective strategic choices in the analysed context, on the basis of literature studies supported by analyses of practical aspects,

- designing a research instrument in the form of a survey questionnaire, complete with diagnostic methods for the examination of process properties, forms, and determinants of effective strategic choices made in startup clusters,
- contribution in the development of a unique database of managers employed by entities in startup clusters,
- production of knowledge (from empirical studies) on process properties, forms, and determinants of effective strategic choices made in startup clusters,
- development of practical recommendations for managers of startup enterprises operating in startup clusters, the managerial personnel of startup clusters, representatives of business support institutions, and national policy makers. The recommendations are designed to improve the effectiveness of strategic choices made in startup clusters.

The final section of this dissertation provides brief recapitulation of the content presented in the chapters, complete with references to this author's significant scientific achievements produced in the context of this study, a list of potential applications of the study in the economic practice, and the overview of the most important conclusions from the study.