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DISCOVERING SUPPORT NEEDED FOR STARTUPS IN THEIR EARLY STAGES USING ON PENTA HELIX FRAMEWORK

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Abstract. Startup companies are expected to become the new engines of economic growth through the rise of new innovation-based entrepreneurs. The Penta Helix framework is widely used as a framework to analyse factors related to the development of innovation-based companies. The use of the Penta Helix framework as the unit of analysis is considered to be relevant because this framework offers a comprehensive perspective and is in line with the economic development innovation and knowledge-based startups. However, there is a lack of research that has been conducted that analyse the nature of support that can be given to startups at their early-stage of creation using the Penta Helix framework that consists of five stakeholders namely Academicians, Businessmen, Government, Communities. This study aims to propose a conceptual model about the nature of support needed by startups in order to survive in their initial stages by using the Penta Helix Framework. This study is a qualitative one using the Focus Group Discussion method, in which participants are made of six early stages technology-based startup founders and CEOs, who were gathered to conduct several discussions regarding the topics. Our results show that obstacles faced by startups include among other: difficulties in obtaining qualified yet affordable workforce in facing existing competitors, difficulties in increasing sales, difficulties in managing product development costs, no adequate support from the government, and ineffective incubation programs. A model that consists of lists of support that startups need, was depict as main contribution from the discussion, named Penta Helix support for startups. This model offers comprehensive practical guide for policy makers to support startups from five perspectives.

Keywords: startups challenges, support for startups, Penta Helix, focus group discussion.

JEL Classification: M10, M13, O10, O11, E60.

Introduction

Startups company's development are among the main concern in many countries. Researches on Startups are important, because startups are expected to become new engines of economic growth, and therefor reduce unemployment (Chiappini, 2016) by becoming businesses that are based on research, technology and innovation that have added values, and become part of the concept of Knowledge-Based Economy, startups have become critical drivers of innovation; through startups, new ideas and research are commercialized, startups are new economy entity engine for many countries (Spender et al., 2017). However, the survival rates of startups are not too high. In the United States during the period of 2011–2016, it is shown that only 45.9% of startups businesses still stand after their first five years of creation. Fairlie, Russell, and Marion (2016), meanwhile in Spain, it is shown that the startups failure rate after five years of operation is about 80% (Devece, Peris-Ortiz, & Rueda-Armengot, 2016). In Indonesia it is discovered that only 29% of startups still survived in their third year after their incubation periods (Cakrasiwi, 2015).

The causes of these startup failures vary ranging from internal to external factors with many different points of view. There have been many studies that aimed to discover the factors that caused failures of startups for example the studies conducted by Agustina (2011), Cantamessa et al. (2018), Fatoki (2014), Gonzalez (2017), Hyytinen, Pajarinen, and Rouvinen (2015), Rodrigues et al. (2015), Triebel et al. (2018a) and CB Insight (2019).

This raise questions to find out what are the problems that startups are facing, what can policy-makers do to improve the overall survival rate of startups. Hence it is important to understand factors that can lead to failures, map them out in a proper framework and address support that can help mitigate these failures.

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On the other hand, many previous studies were aimed to find out the factors that can support the growth of startups, starting from the aspects of individual characteristics, team innovativeness (Hyytinen et al., 2015), government supports (Bloch, 2016; Kiskis & Gulevičiue, 2015), networking activities (Motoyama & Knowlton, 2017; Spender et al., 2017), the existence of Accelerator (Hathaway, 2016; Salamzadeh, 2015), Investors and crowdfunding (Azar & Mackey, 2015; Makris, 2015).

This research is intended to complement previous studies to propose a conceptual based on Penta helix framework to support startup at the beginning of their establishment. This research begins by finding out what obstacles startups face in their time and continues by asking what they need to survive and develop. There is a lack of study conducted in area of support needed by technology-based startup that using the Penta Helix as a framework.

1. Literature review

1.1. Causes of startups' business failures

There are some studies on the factors that cause Startups business failures (Table 1). According to Fatoki (2014), the bankruptcy of new entrepreneurs in South Africa are mainly caused by: (1) internal factors such as the lack of managerial experience, the lack of technical expertise, the lack of trainings and staff development, and poor behaviour towards customers, and (2) external factors such as the unavailability of supply chains management, the high costs of distribution, the intense competition and the increase of production and tax costs (Fatoki, 2014)

According to Agustina (2011) startups failures are caused by: (1) The absence of market, i.e. business failures often occurs because there are no potential markets that absorb the business ideas offered, (2) Managerial expertise; many businesses fail because of the actors' lack of ability to run their business plans, most startups entrepreneurs do not have the ability to plan, and (3) Failure to get access to capital; many startup businesses fail because they do not understand how to use the capital they have, or they don't succeed in getting enough capital at critical times. (Agustina, 2011).

Another study from CB Insights (2019) a leading startup research firm in the United States that examined 20 main causes of startup failure with a sample of 204 ex-startups (post-mortem), found that the main cause of startup failure was the lack of response from the market (42%), where the market did not absorb the products made by the startup. The second was the shortage of money to complete innovative products creation process (CB Insight, 2019).

1.2. Penta Helix concept

The concept of Penta Helix was formed in accordance with the development of the concepts of the innovation model, named Triple Helix theory, then it was developed into Quadruple Helix, and then Penta Helix. Etzkowitz and Loet Leydesdorff (1995) initiated the study of the Triple Helix relationship model between scholars, industries and government. They developed this model and claimed that there was a shift from the dual helix (industry-government) relationship model, or the relationship between industry – academics, into triple helix relationships with the components of: (1) government, (2) industry / business and (3) academics / universities. It is believed that the interaction between academics as parties that develop

Table 1. Previous research on the causes of Startups Failure

DIHK 2014 in Triebel (2018a) (Germany)	Bednar (2018) (Slovakia, n-76)	CB Insight (2019) (worldwide, n = 311)	Cantamessa et al (2018) (worldwide, n = 214)
1. Could not have adequate access to venture capitalists 2. Oversimplify the early period hassle until the launching of business 3. Having ineffective market implementation of the product idea/ business idea 4. Could not find external financing options other than venture capitalist or bank loan 5. Commercial miscalculations (price calculation/cost calculation, business planning, etc.) 6. Have to overcome high bureaucratic or legal impediment 7. Insufficient access to public funding instruments 8. Have difficulties to find skilled workers 9. Have difficulties in filing their intellectual capital applications or in licensing other patents 10. Have inadequate managerial knowledge or industry knowledge	1. Funding failure, 2. Team failure, 3. Partner failures, 4. Other causes	1. No market needs 2. Run out of cash 3. Not right team 4. Outcompeted 5. Pricing/ cost issues 6. User un friendly product 7. Product without business model 8. Poor marketing 9. Ignore customer 10. Product mistimed 11. Lose focus 12. Disharmony among team 13. Pivot gone bad 14. Lack of passion 15. Failed in expansion 16. No financing/ investor 17. Legal challenges 18. Did not use network 19. Burn out 20. Failure to pivot	1. No/ Wrong business model 2. Lack of business development 3. Ran out of cash 4. No product/ market fit 5. Bad organization 6. Competitors more able 7. Wrong positioning in the market 8. Few Customer 9. Wrong customer development 10. Poor product quality 11. No/ wrong scaling 12. Cofounder mis-alignment 13. Lack of funding 14. Problems in team 15. No traction 16. Investor not found 17. Bad marketing 18. Inexperienced management 19. Political/ Economical/ legal problem 20. Problems in customer acquisition

knowledge, and Industry / Business as those driving the economy, and the Government who are policy regulators, in an area, will contribute to competitive advantages for the country or region regarding the development of a knowledge-based economy (Dolfsma & Soete, 2006; Etzkowitz & Leydesdorff, 2000b; Leydesdorff, 1995; Tjakraatmadja, Martini, & Anggoro, 2011).

One criticism of the triple helix concept is that this concept doesn't take in consideration the social aspect in the innovation template developed by the government-industry- scholars based (Fyodorov et al., 2012), which lead to the development of the triple helix concept that result to the creation of Quadruple Helix.

The Quadruple helix concept is the development of the triple helix by integrating civil society, and integrating of the innovation and knowledge (Mulyana, 2014). The Quadruple helix theory take in consideration four sectors, namely: government, business, scholars, and civil society, will contribute to the growth of innovation (Campbell, Carayannis, & Rehman, 2015; Parveen, Senin, & Umar, 2015).

Furthermore, in the process of developing the model, the Quadruple helix was developed into the Penta Helix. The Penta helix is a socio-economic development model that moves knowledge toward innovation and entrepreneurship through the collaboration and the usefulness of it, involving scholars, government, industry, non-governmental organisations, and civil society, as well as social entrepreneurs (Tonkovic, Veckie, & Veckie, 2015). This concept is also explained by Lindmark, Sturesson, and Roos (2009) who stated that the Penta Helix is an extension of the triple helix by involving various elements of society or non-profit institutions to realise innovation. Through synergy, this collaboration is expected to actualise innovations which are supported by a variety of resources that interact synergistically (Lindmark, Sturesson, & Nilsson-Roos, 2009). Thus, it can be understood that non-governmental organisations (NGOs), civil society, and social entrepreneurs are the elements that are added to the concept of triple helix and then resulted to the Penta helix concept. They also stated that the Penta Helix model is a model based on five types of stakeholders, namely: businesses, public administrations, local communities, scholars, and investors (Muhyi, Chan, Sukoco, & Herawaty, 2017).

What is meant by Penta Helix in this study is an interaction framework comprise of Academics, Business, Government, Community, and Media, that intended to for Startups. Those stakeholders of Penta Helix used in this study is inline with the conceptual model developed to support digital businesses (Awaluddin, Sule, & Kaltum, 2016) and also the Penta Helix model developed to support innovation from higher education institutions (Halibas et al., 2017).

2. Research methodology

The methodology applied in this research is the qualitative one, where data are collected using the Focus Group Discussion method. This method is employed with some considerations: (1) it is considered as a good way to gather information from informants with similar backgrounds or experiences to discuss a specific topic of interest, (2) Focus Group Discussion has the main characteristic of using interaction as the result of a discussions among participants and (3) This method is proven to provide more in-depth, more informative, and more valuable data than other methods (Nyumba et al., 2018) there are no critical assessment of the application of the technique. In addition, there are no readily available guidelines for conservation researchers. Here, we reviewed the applications of focus group discussion within biodiversity and conservation research between 1996 and April 2017. We begin with a brief explanation of the technique for first-time users. We then discuss in detail the empirical applications of this technique in conservation based on a structured literature review (using Scopus).

2.1. Participants

The FGD we conducted was attended by nine participants consisting of founders and CEOs coming from 6 startups who are incubated in Bandung Techno Park, Indonesia. They are engaged in technology-based businesses in the IT, Digital and electronics field. The age of our FGD

Table 2. Participants of The Focus group discussion

Name of Startup & Participant	Occupation	Product/ Services	Startup tenure	Stages
Orent (P1)	Founder & CEO	Online marketplace for goods rental	1 year	Early stages of commercialization
SMASH (P2)	Founder & CEO	Online recycle bank information system	2 years	Early stages of commercialization
Sociocaster (P3)	Founder & CEO	Integrated social media management system	3 years	Early stages of commercialization
YukCetak.com (P4)	Founder & CEO	Online printing business	3 years	Production Prototyping
Garputala (P5)	Founder & CEO	Performance management and project management information systems	2 years	Early stages of commercialization
dE Solution (P6)	Founder & CEO	Locker cabinets with RFID technology	1 year	Production Prototyping

participants are ranged between 25–35 years new entrepreneurs whom the business is running since less than 3 years. Those respondents were selected due to their similarity in business, stages and also age and considered able to discuss the topics offered.

All of the startup respondents are in their early stages, none of them are already making profits, one startup just made their first sales (B2B contract) and most of them just finished their beta product and struggling to get their early adopters.

2.2. Procedure

This FGD was guided by a moderator, the participants were asked about three topics in relation with the objective of this study: (1) what are their main concerns in the next 1–2 years and (2) what are the problems they face today and (3) what support is needed by startups from the Penta Helix stakeholders such as University Business, Government, Community and Media. The opinions of the participants were written by a marker on sticky notes and posted on the board. The use of sticky notes, markers and whiteboard as tools of expressing opinions was intentionally done so that the length of expression of opinions would be short enough and could be used as "coding" at the same time.

Discussion was then carried out based on the opinions on the sticky notes posted on the board, in order to eliminate any duplication of ideas, and to obtain agreeable consensus. Elimination of duplications as well as change of opinions were done by revoking and or replacing sticky notes from the board, upon the agreement of the participants.

2.3. Data analysis

Important quotes from participant were written in short sentences on the sticky notes by a marker and put on board. Similar quotes were eliminated upon agreement. Those quotes were grouped together into categories. To ensure reliability of data interpretations, this categorization was also agreed by all participants. Doubts or disagreements were discussed with all participants until consensus was reached.

3. Finding & discussion

3.1. Startups' fear factors

It is important to mention that these concerns are relevant to startups that are in their early stages, either in product development or in early stages of commercialization.

As the opening topic of discussion, participants agreed that within the following 1–2 years of their company's creation, they were most worried about two things: Firstly, they fear if their sales did not reach their estimations, and

As stated by respondent:

"…our main fear is not reaching the sales target that has been set, so that it can cause financial difficulties and ended by bancrupcy..." (P1) .

"... selling products to customer is not as easy as we think before, i'am very worry about my very long process of selling ..." (P2).

Regarding the first main concern, sales target achievement, it is considered as an important issue for participants since all of the startups practice bootstrapping strategy which means they heavily rely on operational revenue to grow and none of them has an investor to finance their operation. They are very worry about the sales target failure to reach their estimation and can lead to financial difficulties. From the discussion, it appears that most of their sales targets are still in the form of assumptions or estimations, This is reasonable, considering that at the initial stage of these startups they do not have previous historical sales figures, and still feel whether their marketing strategies is effective, and therefore they don't know whether assumptions regarding their products and marketing are truly valid.

Secondly, they were very worry about their business sustainability, where they would not survive or had to close down their business. This issue was mentioned by respondents as follow:

"... cashflow can be obtained from sales or from investors' money, but what I am afraid most is running out of cash flow so I have to close my business ... " (P5)

"...the most feared was having to stop the business, it could be because of poor sales performance, the product was not finished or the team broke up due to personal factors..." (P4)

Regarding the second main concern for startup is Business sustainability or Bankruptcy, entrepreneurs are very worry regarding the situation if they have to discontinue their operation. This bankruptcy they fear can be due to sales revenue that does not reach their estimation, failure products, or human resources problem among others.

3.2. Problems encountered

The second topic discussed as elaboration was the obstacle faced by startups. 12 main problems came out from the participants and it was agreed that those problems been grouped into 6 main challenges.

The first one is that, they have difficulty in getting qualified human resources. The participants complained that they did not have enough fund to get qualified human resources, while their products are high technological content based that need qualified human resources. This causes them to be constrained in completing their product development.

The second challenges they faced is the hurdle in facing existing competitors. Some startups FGD participants conduct business line with products in a perfect competition market. Even though they claim that their products are relatively better than their competitors in the market, they still found it difficult to deal with competitors who have already existed in the market, especially if these competitors have greater promotional capabilities and market share than startups.

The third problem is related to the difficulties in increasing sales. Some of the participants are startups that have already been in business for more than two years, but are still stagnant regarding sales performance. Startups acknowledge the difficulties of finding new marketing breakthroughs that can increase the scale of their sales, in which it is due to the inability to fund its promotional costs, especially when the startups have strong competitors. Especially the startups running business that produce high-tech products with a high target of market share, not getting the market share as planned, cause startups financial performance to become stagnant.

The fourth challenge is related to the difficulty to fund their product development costs. The participants complained that they did not have enough funds as well to finance their product development. They stated that they relied on government grants for this matter. When fund from government grants runs out, they tend to stop the process of product innovation and ran other activities that could make them earn money faster. This obstacle inhibits their innovation process.

The fifth is highly related to the fourth one in regard to the fact that the startups feel they were not optimally supported by the government. Government support is one of the main components in the development of startups because all business processes in Indonesia are still indirectly supervised by the government. However, up to now present they still feel a lack of support from the government. Some of the cases disclosed related to this obstacle include: (1) limited grant incentives, (2) tax regulations that are directly binding when they register their businesses, which is a separate phenomenon: (3) component import taxes that is higher than the taxes of electronic goods import which does not reflect government support for domestic electronic startups, and (4) the high cost of managing company certificates and other legalities.

The sixth main challenge faced by startups is related to the incubation program, regarding to respondent, the incubation program they have received were not effective enough. There are several agencies that carry out incubation programs for startups in Indonesia. Their programs are expected to improve the quality of startups fostered. But startups feel that the programs given by those institutes are not in accordance with their needs and have not given significant results. Our respondents argued that incubator institutions were expected to play the key role of mediators that connects them to stakeholders.

These consensus on problems encountered by startups are summarised on Table 3 below:

Table 3. Problems faced by technology based startups in their early stages

No	Obstacles	Consensus on obstacles
1	Difficulty to recruit qualified human resources	1. Problems in getting qualified human resources
2	Technical difficulties in product development (Product Innovation)	
3	Difficulties in technical development of service technology / sales process	
4	Difficulties in facing existing competitors	2. Difficulty in facing existing competitors
5	Hardships in getting buyers	3. Difficulty in increasing sales
6	Flat sales performance	
7	Difficulties to finance product development cost	4. Difficulty in funding product development costs
8	Lack of investors with the same visions	
9	Lack of support from the government	5. No adequate support from the government and
10	Too complicated business legalization administration	
11	High tax on import for electronic components.	
12	Lack of quality of incubation programs.	6. Lack of quality of incubation programs

We then interpreted our collected data which are summarised in Table 2, and which shows that the challenges faced by startups at the beginning of their establishment are:

1. *Recruiting qualified human resources*. Starters find it difficult to get quality human resources with the salary they can afford. As startups with technology-based products, it can be ascertained that they need human resources which have high competencies with a high technology background. Such human resources require high salaries, which startup companies with limited capital are unable to provide. These constraints cause technical difficulties for startups in developing their products, as well as business processes, which are mainly technologically intensive. This point impedance the importance for startup to recruit competence employee and also create good working climate as Trieble (2018), Bednar et al. (2018) and CB Insight (2019) shows that one cause of startups failure is its incapability to create good team to run the business, and a good team must be consist of qualified personnel.
2. *Competitions*, where startups must face competition with players who have previously existed. Due to the massive technology-based companies having sprung up by offering features that are very attractive to consumers in the markets. These difficulties may have arisen because the products are still not able to compete with existing players, or due to the company's inability to read market desires. This point is becoming significance and inline with the finding of Kulicke and Kripp (2013) and also Cantamessa et al. (2018) that points out one of the causes of startup failure is failing to compete.
3. *Flat sales*. Startups must find ways to sell their products in the market with significant growth. When

the products marketed by startups are pioneer products with high technological content, it requires a strong effort from startups to conduct market education so that the market can understand and buy their products, and this is not an easy step for those who have problems in terms of cost.

4. *Product development costs*. The spearhead of startups is innovation, thus startups certainly need lots of money to develop their products. The initial stage of product development is a very challenging stage, where startups must have sufficient funds to carry out product development expenses requirements. This matter is not easy considering the fact that startups still have issues in accessing funds, so they have to finance this activity through searching for funds or from their own working capital. When startups have completed the initial product development stage and still need further injection of funds from investors, getting these financial supports gains are a very hard stage, especially in the conditions, where investors need to have a vision in line with the vision of the startup. In addition of providing cash injections, investors also have the right to provide input related to the ideas and innovations in carrying out business processes by startups. Not all startups and investors have the same perspective regarding how to run a company, so the factors that make investors refuse to support startups financially is that their products are considered to have less potential, also because startups often feel that they are not compatible with visions brought by investors. This product development effort will highly related with startup innovation performance, besides the support of other factors such as dynamic capabilities and intellectual capital as mention by (Wendra et al., 2019)
5. *Gaining support from the government*. Supports from government are needed by startups where the government in this case as policy makers, is expected to be able to make policies that are pro-startups. Some of the policies needed include ease of licensing, grants, taxation, import duties and protection of their technology products. This policy support is a challenge because it is not easy for startups to access and communicate these needs to the government, and this finding is highly related with the importance of local government to support local innovation-based startup (Etzkowitz & Zhou, 2017; Fahad & Sohaib, 2016; Francis, 2016)
6. *Obtain quality incubators*, who are able to help them in the initial stages of their establishment and also who are able to garner support from wider stakeholders for the growth of startups. The challenges, in this case are becoming increasingly severe where the incubator is not widely available and also the capacity of the incubator in handling startups is also limited. This issue implies in importance to enhance quality of incubation program due to its importance toward supporting the growth of startup as mentioned by Agustina (2011).

These findings are in line with and are similar to the one of the research conducted by Salamzadeh and Kawamorita (2015) which states that the challenges faced by startups are:

1. Financial challenges, related to the fact that startup founders at the beginning at the starting stage, have to find funds, the closest people and angel investors. Furthermore, in its journey, startups will also face challenges in seeking additional funds to expand their business by seeking additional investors. Given that the number of venture capitalists in Indonesia is still very limited, this financial constraint becomes a major challenge in itself.
2. Human resource constraints. Usually startups begin their journey with the founders as workers. Without adequate salary for themselves, as time goes by, the founders need more experts to develop and therefor need to employ a number of highly skilled engineers who have the ability to materialize their products. In this stage the issue that arises includes their ability to recruit and pay the salaries of these engineers adequately and at the same time create an innovative working atmosphere and a reliable team among them. With limited capital support at the starting stage of their business, it is clear that efforts to recruit qualified personnel are a crucial challenge in itself.
3. Obstacles in getting support from stakeholders such as angel investors, incubators, science and technology parks, accelerators, small business development centres, venture capitals, etc. The challenge is how startups are able to mobilize support from these stakeholders. In this case, the role of the incubator and also looking for ecosystems that are able to protect and support their development.
4. *The last obstacle according to this study is the external environment constraints of the business, in the form of trends that must be followed or created, the demands of the markets that have been fulfilled, legal compliance demands that must be followed and other external demands which are challenges that are not easy to overcome* (Salamzadeh & Kawamorita, 2015).

Some of the obstacles faced by startups based on this study are where startups experience constraints in the HR field, competition challenges, marketing difficulties, in line with the findings of the obstacles faced by startups that are the cause of their bankruptcy which has been investigated by (Bednar et al., 2018; Cantamessa et al., 2018; Triebel, 2018b) and CB Insight (2019) and have been described in Table 3.

3.3. Support needed from the Penta Helix

The Penta helix model is a socio-economic development model that drives economic knowledge to pursue innovation and entrepreneurship through collaboration and

usefulness of five elements, namely: (1) Scholars, (2) Business or businessmen, (3) Government, (5) Community, and (5) Media. The five components of the Penta Helix model are abbreviated as SBGCM. During our focus group discussion, participants highlighted the kind of support that was expected from SBGCM stakeholders to help startups develop themselves.

From the first helix, scholars or universities, the FGD participants agreed that they expected to have some fresh graduated students with high competence that would want to join their startups companies they founded, with the salary level they could afford. Universities fresh graduated students could therefore provide means of increasing knowledge for startups by conducting coaching / mentoring / training programs. They could also provide support towards the startups in form of providing knowledge related to technology, management and creative ideas.

As the second helix, businesses, plays an important role. The support expected from this helix can be in form of providing initial capital needed by the startups to facilitate them in realizing their innovation ideas. In addition, they could also share experiences and knowledge about running a company through training or coaching program. The collaboration between established Business and Startups were therefor highly expected. Other assistance that could be given would be in the form of finding partners in the field of management, providing work facilities such as space and internet, helping them in finding trusted vendors, marketing assistance, networking and sales channels.

As the third helix, the government was expected to provide support in form of: (1) ease of licensing and legality costs. At present, the cost of getting legal documents is quite high. If license and legal fees for the startups were subsidized by the government, it would significantly be helpful. (2) As our respondents were mainly engaged in producing information, technology and electronics products, they import a lot of high-tech components, but the tax duties on those components are quite high, to a level of the import duty on some components needed being higher than the import duties of the electronic products itself as a whole. (4) The capital grant assistance was also expected by the startups, in a mean that most startups did not yet have the assets and eligibility to apply for bank loans. (5) Startups also needed adequate sales margin to fund their products development, Also, promotion assistance through networking and channelling from the government would have been be very helpful for them (6) Startups also expected to be promoted or endorsed by local government officials to be able to expand the usefulness of their product to the community.

Startups expected support from community and society as the fourth helix in form of: (1) obtaining recommendations on competent workforce, (2) seeking for business collaboration, (3) having sharing session on business issues, (5) finding recommendation on trusted vendors, (6) gaining networking, and looking for sales channels as well as (5) winning endorsement from community public figures which would help them in promoting their business.

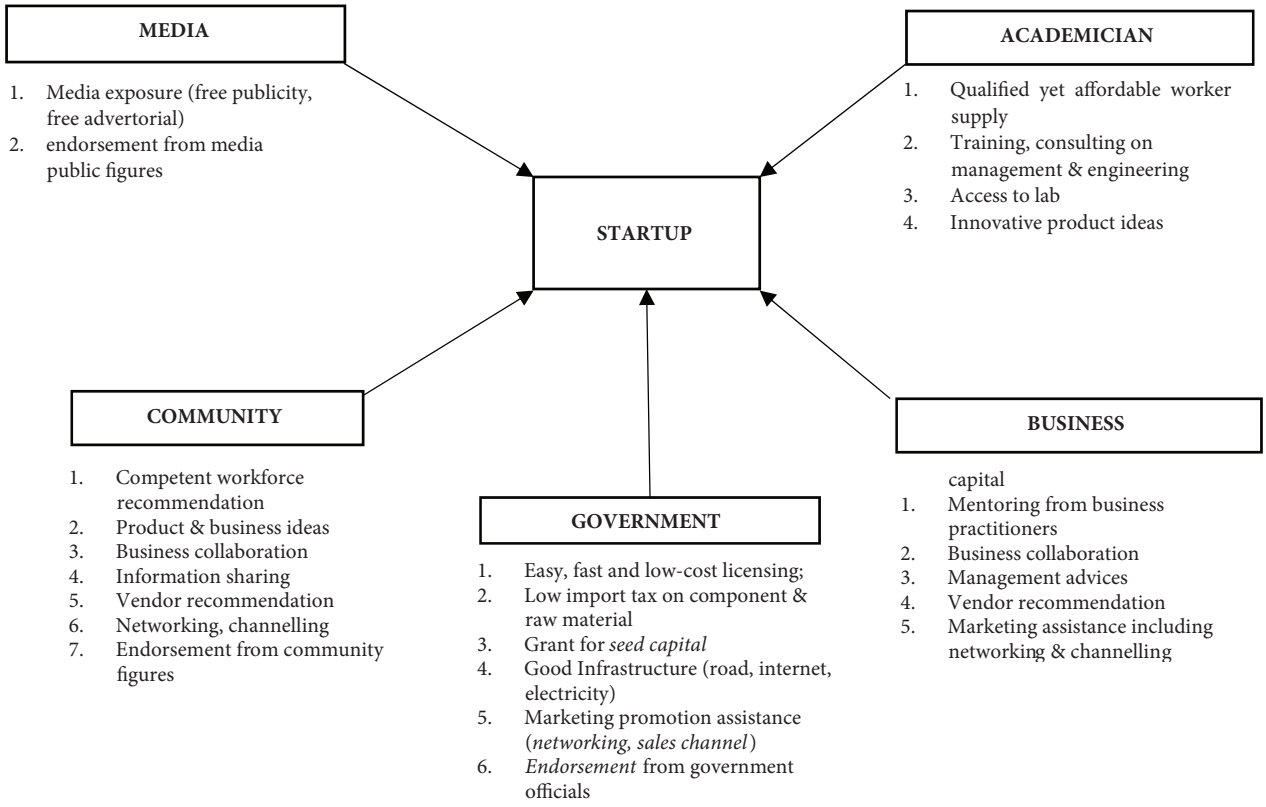

Figure 1. Penta Helix Support for Startups in their early stage

Regarding Media as the fifth helix, startups expected the help of the Media through exposures, such as media special program covering the startup businesses and products, or giving free advertising or free publication. Other assistance such as in form of endorsers from media savvy public figure was also something highly expected. Figure 1 depicts the Penta Helix model framework driven from our focus group discussion.

In order for the Penta Helix stakeholders above to be able to carry out the functions of supporting startups, what so called a "hybrid organization" in Triple Helix concept, is needed to coordinate, stimulate positive interactions and encourage the support activities of each of the above stakeholders for innovative startups (Etzkowitz & Leydesdorff, 2000a), in relation to this matter, another study states that the hybrid organization tasked with being a catalyst for the synergistic relationship in the triple helix is a Science and Technology Park (STP) (Figure 2) (Oh & Yeom, 2012). STP is a place whereas inside the place located startups and innovative firms, which the management of the park provide adequate programs, facilities and infrastructure in order to help their tenant to achieve their innovation goals as well as their commercial performance.

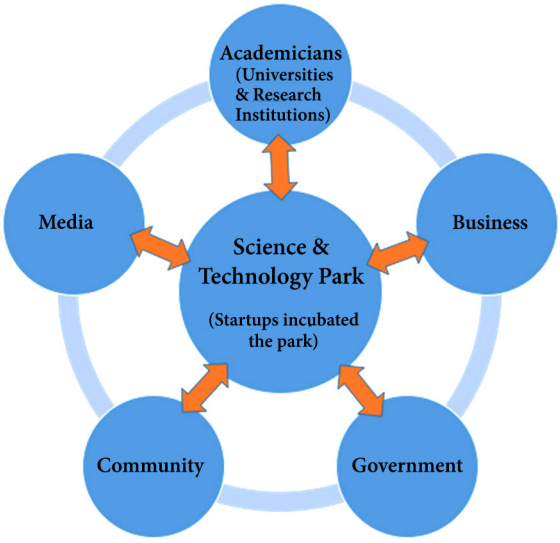

Figure 2. Science and technology park as a Penta helix catalyst (adopted from Etzkowits & Leydersdoff, 2000b and Oh & Yeom, 2012)

This concept to propose an Science and Technology Park (STP) to become a hub organization to coordinate the support from Penta Helix toward startups, is also inline with one of a basic function of an STP which is to foster innovation-based startups through incubation and spin-off processes and manage the flow of science and knowledge between Universities, Research Institutes, Companies and Markets (Henriques et al., 2018).

Conclusions

One of the main concerns of the startups that participated in our study is the fear of not reaching their sales targeted estimations, which would endanger their cashflow, and their sustainability, if they don't reach the level of sales expected, they fear that they will have to go out of business. We found out that the overall challenges faced by startups are: first, in recruiting qualified human resources, second, facing the existing competitors, third, in increasing sales (flat sales), fourth, in obtaining sources of product development costs, fifth, No adequate support from the government, and fifth, quality of incubation program. We developed a theoretical model based on the Penta Helix, to map out the Support needed by startups at their early stages of establishment. Our model shows the kinds of support that the Penta Helix components stakeholders are expected to provide to help startups in facing their challenges.

However, further researches are needed in order to validate whether or not the constraints and the supporting points above are homogeneous for all startups in their early stages. Apart from that, it would be interesting to conduct further research to discover whether these supports needed, if given, would affect the success and performance improvement of the startups, and in which extend the above support items would affect the success of the startups as a whole.

Recommendation

Our main objectives were to formulate the Penta Helix model to support startups on their earlier stage of establishment. Summarising the focus group discussions activities, gave us an overall glimpse of the supports needed by startups, which were agreed during focus group discussions by participants who did experience issues, these supports practically need to be provided by Penta Helix stakeholders for startups to be able to get support to survive and develop in their early stages of growth. To survive, grow and develop, startups expect support from this Penta Helix component namely stakeholders in the form of: (1) Qualified worker, training, consulting on management & engineering, Access to laboratory, Innovative product ideas from Academicians, (2) Seed capital, Mentoring, Business collaboration, advices, recommendation and Marketing assistance including from Business stakeholder, (3) Easy, fast and low cost licensing, Low tax and duties, Infrastructures, promotion assistance and Endorsement from government officials, (4) recommendation, ideas, collaboration, Information sharing, Networking, channelling and Endorsement from communities (5) Media exposure and endorsement from media public figures. The fact that distinguishes this model from the previous penta helix model is the specificity that this model is relevant to be applied to support startups especially during the early stages of their growth.

To ensure stakeholders in the Penta Helix can carry out their functions effectively, Science and technology park is proposed to serves as a catalyst and coordinates the support from the respected stakeholders to support the startups, especially ones that are incubated in the park.

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