International Journal of Management, Finance and Accounting

Driving Inclusiveness from the Grassroots: The Tambunan Inventors

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Abstract

Reviews of recent studies indicated the growing importance of development and attainment of inclusive societies via inclusive innovations. This is especially relevant for addressing the disenfranchised or those at the base of the economic pyramid (BOP). Gaps in the literature pointed to; l) the need for understanding of inclusive innovation processes among small, medium and micro enterprises vis-à-vis among local entrepreneurs, ll) there is a lack of studies on inclusive innovation movement in Malaysia. Specifically under the SME Masterplan 2012-2020, there are a number of high impact programmes defined to drive numerous aims. Specifically, for driving inclusive innovation among Small and Medium Entreprises (SMEs) in Malaysia, the High Impact Programme 6 (HIP6) is designed with the focus on development of grassroots innovations. In order to get some insights, case studies were carried out among participants of the HIP6. Cases were recommended by the lead agency entrusted with the implementation of the initiative. Among the cases, a cluster in the area of Tambunan in the state of Sabah, Malaysia was identified. Thus, this paper presents the cases of the Tambunan grassroots inventors.

Keywords: Inclusive, Grassroots, Innovation, Case Study, Tambunan

Submitted on 11 November 2020; Accepted on 13 January 2021; Published on 25 February 2021

International Journal of Management, Finance and Accounting
Vol. 2, Issue 1 (2021) https://doi.org/10.33093/ijomfa.2021.2.1.6

Published by MMU PRESS. URL https://journals.mmupress.com/index.php/ijomfa/index

1. Introduction

In recent years there have been increasing pressure to find better ways to tackle problems with regards to poverty, globally, beyond aids and charity (Prahalad, 2005 & 2009; Prahalad and Hammond, 2002; UNDP, 2008). Studies discussed and highlighted the need for the roles of the torch bearers to shift from governments and NGOs to private sectors players; MNCs and SMEs (Hart, 2005; Kandachar and Halme, 2008; Prahalad, 2005; Prahalad and Hart, 2002; Srinivasa and Sutz, 2008; UNDP, 2008). Studies by Prahalad and Hart (2002) and World Resources Institute (2007) underlined the significant opportunities for the private sectors to address the needs of the sizeable global population that are at the base of the economic pyramid (BOP). If left unanswered, the BOP population will further be disadvantaged due to their circumstances, widening the gap from the various benefits of economic development the rest of the population able to access. Such, divisive scenario can lead to compounding the effects of the various problems and issues face by the BOP and the governments attempting to resolve them.

In September 2011, a UN System Task Team was formed to support the UN system-wide preparations and to bridge technological divide for the post-2015 UN development agenda, by advocating inclusive innovation (United Nations, 2014). These imperatives had accentuated the importance and relevance of inclusive innovations towards comprehensive growth and the realisation of inclusive societies.

2. Inclusive Innovation

George, McGahan and Prabhu (2012) (p.663) defined inclusive innovation as “the development and implementation of new ideas which aspire to create opportunities that enhance social and economic wellbeing for disenfranchised members of society.” According to Burton and Kagan (2005), factors either family, economy or state such as gender, race, disability, knowledge and poverty are the common causes for disenfranchisement or marginalization of individuals or group of individuals. Meanwhile, the Global Research Alliance (2012) defined inclusive innovation as “any innovation that leads to affordable access of quality goods and services creating livelihood opportunities for the excluded population, primarily at the base of the pyramid, and on a long term sustainable basis with a significant outreach”.

There had been a substantial amount of work on inclusive innovation (Mortazavi, Eslami, Hajikhani and Väätänen, 2021). Body of work on inclusive innovation have discussed aspects such as types of organizations involved and their success strategies (Anderson and Markides, 2007; Galema, Lensink and Mersland, 2012; Kanter, 2008; Prahalad, 2004); the roles of individuals in organisations towards the inclusive orientation (Tracey, Phillips and Jarvis, 2011); the roles of policy frameworks including regulatory, as well as infrastructures in driving inclusive innovation activities (Hall, Matos, Sheehan and Silvestre, 2012). In line with the seminal work by Prahalad and Hart (2002) that pointed towards the attractive business prospects due to the magnitude of the BOP market, a number of work can be seen exploring the various instances of inclusive innovation engagements among large firms or MNCs (Nestle Research, 2011; Halme, Lindeman and Linna, 2012; George, McGahan and Prabhu, 2012). However, literature still lacks insight to the "intra-firm processes" towards inclusive innovation (Halme et al, 2012) (p. 744). This point to the gap in the literature relating to inclusive innovation processes among small, medium and micro enterprises. The widespread adoption of the inclusive agenda is rather evident from studies that discussed efforts and insights from the African continent (Khayesi and George, 2011, George et al, 2012), South America (Smith, Fressoli and Thomas, 2013), India (Rezaie et al, 2011; Sonne, 2012; Ramani and Mukerjee, 2014), Europe (Rezaie et al, 2011; Hegger et al, 2011), China and North America (Rezaie et al, 2011). This review points towards the second research gap, namely the study of the extent and nature of the inclusive innovation landscape in Malaysia.

Another type of innovation that is commonly discussed in the same discussions on inclusive innovation is “Grassroots Innovations” (Patnaik and Bhowmick, 2020). This is because that instead of being the targeted beneficiaries or users of the innovations when we discusses about inclusive innovations, there are numerous instances when the very same group actually being innovative and produce innovations themselves thus the term “Grassroots Innovations”. As explained by Bhaduri and Kumar (2009) and Gunu (2010), such innovations arise from the masses often among those at the base of the economic pyramid out of necessity. Specifically, they defined grassroots innovators as "...individual innovators, who often undertake innovative efforts to solve localised problems, and

generally work outside the realm of formal organisations like business firms..." (Bhaduri and Kumar, 2010) (p. 29). Thus, it can be said that such innovations arise organically from the community. Common drivers for such innovations are necessity as mostly the innovators are the users of the innovations. This concept is closely associated with the concept of “frugal innovations” (Weyrauch and Herstatt, 2017) and the idea of “jugaad innovations” made popular by Radjou, Prabhu & Ahuja (2012).

Studies have shown the significant relevance of inclusive growth agenda in guaranteeing the economic development amongst the ASEAN countries (Wu, 2013). In Malaysia, the political will towards inclusive growth can be seen in a number of key governmental actions over the last few years, namely, innovation and inclusive development were included in the “10 Big Ideas” of the 10th Malaysia Plan. Furthermore, the tenth instalment of the five-year economic development strategy envisioned the transformation into inclusive socio-economic development through increasing the income levels of BOP households, empowering the local pool of entrepreneurs, improving infrastructure, etc. It was reported by the World Bank (2014) that in Malaysia "pockets of poverty exist and income inequality remains high relative to the developed countries Malaysia aspires to emulate". Recognizing this reality, economic development agenda continue to emphasis on empowering the low income groups, driving the micro, small and medium enterprises, as well as encouraging innovation from the society. More specifically, as highlighted by Hashim (2012), grassroots innovations is the main objective of the High Impact Programme 6 (Inclusive Innovation) from the SME Masterplan 2012-2020 under the mandate of the SME Corporation Malaysia; the main agency under the Ministry of Entrepreneur Development and Cooperatives (MEDAC). Thus indicating the importance and intertwined nature of grassroots innovations in the Malaysian inclusive agenda.

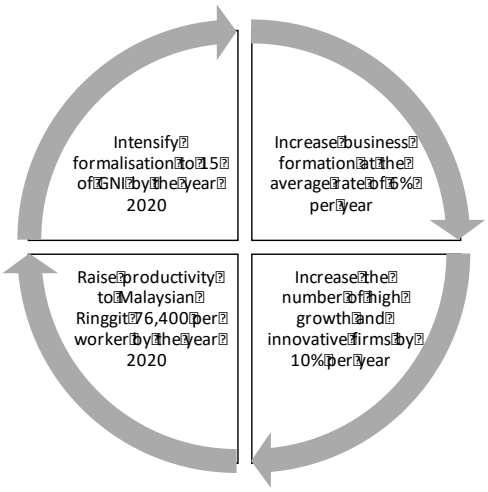
There are clear signs for political will towards inclusiveness in both economic and societal development in Malaysia. There are policy measures in place to drive innovation and the entrepreneurs. Amongst them is the SME Masterplan 2012-2020 which had identified a key vehicle for the realization of the vision is through grassroots innovations. The question now is how are the people responding; is the torch proffered by the government well received? In order to get some insights, case studies were carried out among participants of the High Impact Programme 6. Cases were recommended by the lead

agency entrusted with the implementation of the initiative. Among the cases, a cluster in the area of Tambunan, in the state of Sabah was identified. Thus, this paper presents the cases of the Tambunan grassroots inventors.

3. SME Masterplan 2012-2020

The Malaysian SME Masterplan 2012-2020[1] with the tagline "Innovation-Led And Productivity-Driven Growth", has a total of 6 High Impact Programmes (HIPs) and 26 supporting initiatives all designed to deliver the following goals (Figure 1).

Figure 1: SME Masterplan 2012-2020 Goals



The HIPs are;

1. HIP1 - Integration of Business Registration and Licensing

   The lead agency is Malaysian Administrative Modernisation and Planning Unit (MAMPU), it aims to encourage formation of new businesses and intensify their formalisation through establishment of a single portal for business registration and licensing.

2. HIP2 - Technology Commercialisation Platform

[1] https://smeinfo.com.my/policy-regulation/sme-masterplan

The lead agency is PlaTCOM Ventures Sdn. Bhd. with the aim to be the national technology commercialisation platform that bridge the last miles gaps of local innovations into becoming market successes.

3. HIP3 - SME Investment Partner

   The lead agency is the SME Corporation Malaysian (SMECorp) which focus on addressing the financing gaps for startups and early stages SMEs.

4. HIP4 - Going Export

   The lead agency here is the Malaysian External Trade Development Corporation (MATRADE). This HIP aims to increase the number of SMEs that enter global markets. They provide guides and assistance to SMEs with exporting potentials and those that want to expand both in terms of new products as well as new markets.

5. HIP5 - Catalyst Programme

   Another HIP being led by SMECorp. It is to offer a range of incentives and assistance to selected SMEs that are to be groomed into becoming homegrown icons.

6. HIP6 - Inclusive Innovation

   The lead agency for HIP6 is Yayasan Inovasi Malaysia (YIM) or Malaysian Foundation for Innovation. YIM was established with the mandate to promote and champion innovation in the country. In other words, YIM can be seen as the agency entrusted to develop and energise the national system of innovation. Through the HIP6, the government aims to address the needs of the bottom 40% of the income group (B40). The HIP6 initiatives were designed to encourage the B40 to be innovative by producing solutions, goods and services that they need that can led to their empowerment. In other words, the vision is to achieve transformation among the communities via grassroots innovations. YIM clearly indicate their focus on grassroots innovations in their website; “Towards this goal, YIM has zeroed in on grassroots innovations – using novel or new ideas that are usually developed in unconventional settings to deal with issues that are often neglected in the context of mainstream solutions. These often adopt a “bottom-up” approach for community empowerment through affordable access, enhanced quality and functionality, access for excluded population such as the poor, disabled, women, elderly and

disadvantaged groups with significant outreach and sustainable strategies."[2] Following section provides further details on this HIP.

It was reported in February 2020 by Focus Malaysia[3] that all of the six HIPs from the SME Masterplan are being implemented. It was reported that the various lead agencies recorded some key challenges namely; "the implementation of the HIPs is uneven with some functioning largely as intended and others requiring more attention. Second, more consistent monitoring and evaluation is needed across the Masterplan." As the year 2020 enters into the fourth quarter, it is timely to review the impacts of the various initiatives under the SME Masterplan in order to gain insights of key lessons for the next strategic framework to drive SMEs development in the country.

4. High Impact Programme 6

This HIP is the main initiative designed to drive inclusive innovations in Malaysia. The programme offers local SMEs and entrepreneurs especially from the rural areas of the country guidance, coaching, technical and management support to produce as well as leveraging on innovations that will lead to transformational impact not only for them but also the communities. Specifically, the programme create opportunities for public-private partnerships between the SMEs with collaborators from various government agencies including academia depending on the nature of the business or needs of the participating SMEs. Emphasis is placed on ensuring ownership and sharing of responsibility plus accountability among the matched partners. The expected main deliverable would be innovations that have the ability to benefit the communities.

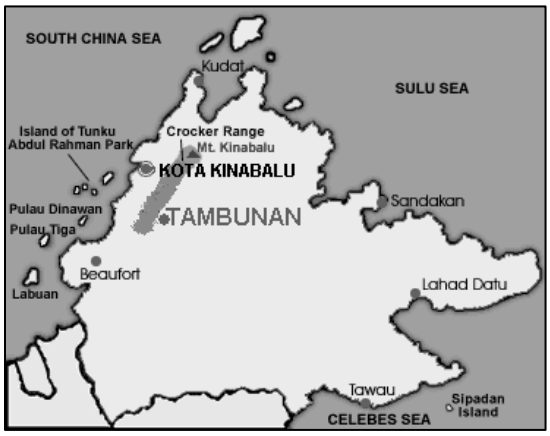
YIM organised HIP6 Inclusive Innovation Challenges around the country as the funnel to identify potential participants that can be offered assistance and funding to further develop their proposed innovations. Well over 20,000 have participated in these challenges that focused on four main themes; l. Utility, ll. Health, lll. Education and lV. Productivity. As of 15th October 2020, YIM reported in their inclusive innovation website[4] a total of 1599 innovations produced cumulatively, 492 produced in 2019 and for 2020 a total of 72 innovations had been produced thus far.

[2] https://www.yim.my/overview/
[3] https://focusmalaysia.my/mainstream/lessons-learnt-from-the-sme-masterplan/
[4] http://iic.innomap.my/

5. The Tambunan Grassroots Inventors

Tambunan (Figure 2) is an interior district located around 80 kilometres east of Kota Kinabalu, the capital for the state of Sabah; located at the northern part of Borneo also know as the "land below the wind". The state is blessed with a varied geographical landscape from mountain ranges which include Mount Kinabalu (the highest mountain in Malaysia and one of the top 5 highest mountains in Southeast Asia); tropical forests; beautiful beaches and islands; rich marine life; mangroves, rivers and fertile lands; and abundance of flora and fauna. Furthermore, the population is very diverse with over 30 indigenous groups and ethnic races.

Figure 2: Tambunan, Sabah



Tambunan itself is in the valley of the Crocker Range, benefits from an all year round mild tropical climate. Thus, it is largely an agricultural area and distinctively known for the bamboo forests that resulted from the British colonial era where an edict was passed that required 20 bamboo sprouts had to be planted for every bamboo cut. Against this background and rich ecosystem, a number of enterprising locals capitalised on resources and produced various innovative solutions.

5.1 Grassroot Inventor 1: Mini Hydro Electric Generator

The mini hydro electric generator is a grassroots invention by Mr. Abdul Hamid Jasmin of Kampung Libang Laut, Tambunan. The impetus for the invention was the frequent power outages experienced by the village that caused disruptions to their daily lives and livelihood.

The unreliable power supply led the villagers to acquire diesel generators for their homes and on average they need to spend 10 Malaysian Ringgit (MYR) per day for fuel, this does not include the maintenance costs. The amount may appear small but for these villagers which mostly are farmers are quite taxing on their already small income.

Abdul Hamid Jasmin used a reclaimed turbine, used pickup truck gearbox, and dynamo. His system installed at a nearby stream was able to generate electricity between three to five kilowatts. His design proves to be robust and reliable as well as environmentally friendly. His generator has brought positive impact to the villagers as it has reduced their energy costs from MYR 10 per day to around MYR 15 a month per household including maintenance for changing the turbine every three months.

This father of seven never attended any training nor has experienced related to hydroelectric technology. However, he is a serial inventor as he already invented various other inventions for his own usage such as rice diffuser, grilling appliances and so forth. He then participated in the Innovation Walk programme which took place on 18th September 2011 by the Malaysian Innovation Foundation (YIM). Since he has produced and installed his generators in other villages around the area. The latest model of the generator (Figure 3) has a capacity of 40KW costing around MYR 300,000 funded by World Association of Industrial and Technological Research Organisation (WAITRO) .

Figure 3: Mini Hydro Electric Generator by Mr. Abdul Hamid Jasmin

5.2 Grassroot Inventor 2: Ginger based products

Agricultural activities are the main economic activity in Tambunan, especially ginger plantation. Through the help from several government agencies, such agricultural

commodities had been identified to be developed into various products to be commercialized in both local and export markets.

Hendry Charles is the grassroots innovator who managed to create the opportunity by utilising local resources (ginger) which is abundantly available in Tambunan. In the year 2006, Hendry Charles realised his business idea beginning from ginger cultivation in a small scale. Then, in 2007, he took a foundation course in ginger processing technology organised by MARDI. He now has a company that helps downstream local workers in ginger production.

Figure 4: Products from Tambunan Ginger

Among the main issues related to his business was that there were no readily available ginger processing machines to optimize the production line. Thus in 2008, Hendry enrolled in workshops on processing technologies and applied for a loan from Sabah Farmers' Organization Authority (FOA). He was able to commissioned machines that able to increase their efficiency in ginger peeling process. Specifically, his ginger peeler machine is an adaptation of the potato peeler machine from China. With the utilization of these machines, eight kilograms of ginger can be peeled in three minutes instead of five kilograms in a day if by hand. He also invested in product development leading to a range of ginger based products.

The innovations allowed him to participate in Jejak Innovasi 2012 and by the year 2015, his business was selected by YIM and SMECorp for HIP6. Through the guidance given through HIP6, he drafted a 5-year expansion plan which include exporting their products, building a factory with bigger capacity and open a bigger ginger plantation, all in

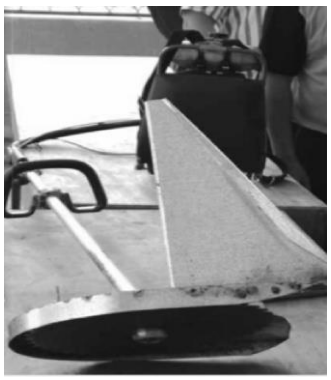
Tambunan. This created more job opportunities for the local communities and thus increase their income level as well.

5.3 Grassroot Inventor 3: Rice Harvester Machine

Julius Peter is a grassroots innovator who gets the idea to invent a rice harvester from a grass cutting machine. Rice harvesting is back breaking, time consuming, often with high wastage and lead to lumbago for the farmers. Julius wanted to overcome this and find a solution that can not only lighten the burden of this work but also reduce the wastage due to scattering of the rice seeds using the conventional harvesting process. Julius found that he can refashion the common hand held grass cutting machine into an efficient rice harvester by adding an implement that can guide the rice stalks from the cutter to a collecting end. All that is needed was an additional piece of zinc at the end of the cutting blades of the machine. With a simple innovation, he managed to reduce the amount of wastage as the zinc sheet added ensure the cut stalks move the along the zinc sheet to the end into sheaves.

His harvester had shortened the time needed to harvest the crop enabling for double cropping thus increasing their yield. His harvester machines are now being adopted by other fellow farmers whom also enjoying better yield. The harvester was also picked up by YIM in their Jejak Innovasi that led to Julius to be given a seed grant to enable him to produce more units as of his rice harvester.

Figure 5: Rice Harvester by Mr. Julius Peter



5.4 Grassroot Inventor 4: Bamboo Saxophone

Philipus Jani discovered his passion in saxophone when he experienced a brass saxophone borrowed from one of his buddies. He enjoyed playing the saxophone until his friend took

it back from him after one week. Since he was not able to afford a brass saxophone then, he decided to make one himself. He started his experimentation in 1993 by looking for lower cost materials around Tambunan. He was attracted to the abundant supply of bamboo and decided to try creating a saxophone using bamboo. He was inspired by another local flora namely the pitcher plant.

There were many naysayers but he was tenacious and his perseverance paid of after 13 years of experimentation after he found a type of bamboo known as Rugading. Rugading bamboo are sturdy but light, making it ideal for the intended purpose. Philipus Jani finally successfully produced a bamboo saxophone in 2005. He then took a further year to refine his design till he found the exact calculation and measurement for the holes of saxophone that gives a nice tune with quality comparable to brass saxophone. After nearly 14 years of persistent efforts he finally produced a perfect saxophone made of bamboo or "Somporing". Somporing means "the owner of the bamboo" in the Dusun[5] language. The somporing is truly an inclusive innovation as it is a more accessible (low cost) saxophone without any loss of quality.

Somporing received recognition in YIM's Jejak Inovasi 2011 and led to numerous assistance and exposure for Philipus Jani. He established Bambooza Exotica where he produce the somporing as well as other merchandises. Furthermore, this inventor has continued to produce more innovations using bamboo. So far, he has produced 19 kinds of music instruments all made from bamboo. He produced the instruments to order and his customers are not only from Malaysia but also from other countries including Japan, Korea, Netherland, Indonesia, Singapore, and Australia.

Figure 6: The Somporing by Mr. Philipus Jani

[5] Dusun people is the largest indigenous ethnic group in Sabah.

6. Discussion

Reviewing the cases of the Tambunan grassroots innovators, it can be identified that they share a number of common characteristics and viewpoints. Among the common factors following came across as significantly important from the interviews conducted with them. Firstly, all of them are resourceful individuals, able to source and utilize resources that they were able to obtain for their innovations. Furthermore, they were able to recognize opportunities and leverage on the numerous programmes as well as incentives made available to them by various bodies and government agencies. One critical opportunity that they all correctly recognised and exploited was the HIP6 initiatives by YIM. This definitely have led to more assistance and opportunities for them to further develop their innovations.

Secondly, they were all driven by necessity; their situational needs from unreliable power supply, to search for more efficient processes, and desire to fulfil a passion that was not affordable, made them innovate for the solutions. This is definitely in line with the defined traits of grassroots innovators as highlighted earlier.

Thirdly, the four cases also displayed a strong sense of community. The first case, innovated a solution needed not only by himself but also the rest of the people in his village. The same was seen in the third case where the inefficient harvesting process was costing them with high wastage. Thus, he produced a solution that had led to not only lower wastage but increase in crop yield which was adopted by other farmers in the community. The second and fourth cases displayed their sense of community through their innovative efforts via the creation of job and business opportunities. This viewpoint is definitely important towards the realization of the inclusive agenda.

Finally, another viewpoint that seems to be clearly displayed by the four cases which also colour their innovation choices is their strong sense of pride to their hometown. Their love for Tambunan seems to be another important factor pushing them them to innovate so that they can solve existing problems, share benefits and celebrate the local heritage.

7. Conclusion

In general, based on the cases above, it can be said that there is a good culture of grassroots innovation in Malaysia. Driven either by necessity or interest, members of society are taking initiatives to innovate. This culture definitely need to be nurtured and cultivated further as it can lead to the country becoming regional innovation powerhouse. Thus, it can be said that the HIP6 initiative is a timely effort from the government.

HIP6 initiative has shown some positive impacts on grassroots innovations in the country specifically and towards inclusive growth in general. A key criteria for selection is for projects must show good potential for commercialization. Once, selected the participants benefit from interventions that help propel their development further; marketing and promotion; as well as funding. However, the growth remains a challenge for the innovators given their scaling capacity and nature of the innovations. Exception was seen in case 2 since the nature of the products and the nature of the innovator himself. Specifically, his entrepreneurial orientation is much higher given his background which included tertiary education in business administration, prior career in government agency and participation in numerous entrepreneurship trainings. Thus, entrepreneur development programmes should be one the major interventions for the selected HIP6 participants.

HIP6 can be seen as a well positioned downstream initiative to further drive and develop grassroot innovations that have emerged organically from the society. With the intervention of HIP6, selected innovations can be scaled up to create a much more substantial impact for the beneficiaries as well as for the innovators themselves. This also points to the potentials for complementary upstream initiatives to further spread the innovation culture across the country, among the younger generations and to provide pertinent knowledge, skills as well as know how.

Furthermore, as the world is gripped by the Covid-19 pandemic, the need to empower the grassroots so that they are able to tackle the economic impacts of the pandemic is becoming more important. Grassroots innovation could be a key strategy for the country

to ensure we emerge at the end of the Covid-19 economic storm with the best possible ability for survival and growth.

Acknowledgements

This research was supported by the Fundamental Research Grant Scheme (FRGS) from Ministry of Higher Education Malaysia [Grant Code: FRGS/2/2014/SS05/MMU/02/2]. Furthermore, this is also an initiative from the Case Study Special Interest Group, Centre of Business Excellence (CoBE), Multimedia University.

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