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Embracing the New: Factors Influencing the Adoption of Sustainable Farming Technology in Mango Farm Cooperators of Bataan, Philippines

Leslie R. Jorge*, Hermogenes M. Paguia, and Lorna Roldan
Bataan Peninsula State University, Bataan, Philippines
*Corresponding author: lrjorge@bpsu.edu.ph

Abstract

The study aimed to determine the factors that influence the adoption of sustainable farming practices introduced by the Bataan Peninsula State University (BPSU) pool of researchers and agricultural studies experts to local mango farmers in Bataan, Philippines. The study is participant-oriented and utilized an interpretative phenomenological analysis approach which allowed the farmers to express themselves and their experiences in a manner without any alterations and prosecution. Purposive sampling was used in determining the participants who were farm cooperators from the BPSU Project under the CHED Dare to Research Funds on sustainable farming practices. The study revealed the factors influencing the adoption of sustainable farming technology in mango farm cooperators of Bataan. As a result, seven (7) themes emerged, namely: Acknowledged Awareness, Substantial Information and Logistical Support, Innovation Management, Tolerable Consequences; Seamless Collaboration, Tried Effectiveness, and Refocusing the Innovation. It can be noted that some of the themes and their underpinning dimensions may overlap to some degree. The result of the introduced innovations as perceived by the participants varies in location and timing. There were farm cooperators who successfully harvested as expected from the project. However, for those who failed, their failure was attributed to their location, climate change, and the use of chemical mixes against pests. It is recommended that the university takes into account the provisions for logistical support to encourage participation in projects andprograms being implemented.

Keywords: *Technology Transfer, Mango Farming, Interpretative Phenomenological Analysis*

Introduction

Research and innovation used to be unrecognized and were often neglected as to their potential to contribute to sustainable development. Often overlooked, research expertise is an integral component in solving complex issues from society, the environment to economics certainly is observed around the globe (Bammer *et al.*, 2020). With the continuous discovery of innovations brought about by the capacity of a country to exhaust potential sources along with abled human resources, a systematic interaction of small and large businesses is at play to contribute to the economies of scale and sustainable environment (Khairutdinov, 2018). With the importance of innovation and research, universities must create new knowledge and work with industry professionals to hone the skills of community members towards having better and more productive processes (Rybnicek & Königsgruber, 2019).

Adoption of innovative agricultural technologies is seen as a vital contributor to alleviating poverty. It is likewise perceived in developing countries as a constant reference to policy initiatives for obvious benefits of many new agricultural technologies which may include machinery and or management practices (Mottaleb, 2018). Despite its many benefits, the adoption of new agricultural technologies remains to be at a minimum.

A similar observation was seen in a study in Europe where barriers to the adoption of smart farming technologies were identified. Though there were innovations successfully adopted, they were eventually rejected by users and would often go back to their traditional practices even if benefits were enjoyed (Caffaro & Cavallo, 2020). Over the years, a myriad of researches increasingly focused on the factors that influence farmers' adoption of sustainable farming practices. Behavioral factors influencing farmers' decision to adopt

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environmentally sustainable practices,disposition factors, social factors, and cognitive factors emerged as primary clusters (Dessart *et al.*, 2019). Straub (2009) also had similar findings that successfully facilitated the adoption of technology which addressed cognitive, emotional and contextual concerns in adopting processes that influence decisions to adopt innovations.

It can be noted that from the exhaustive published researches trying to determine the factors influencing farmers to decide to adopt innovations and new sustainable farming practices, farmers are still unable to embrace change on a long-term basis and drop their old ways and practices. Agriculture in itself is a science that includes a wide range of technologies that inevitably discovers new systems and processes with enormous challenges, along with transformational changes that are particularly important in the context of global change (Huet *et al.*, 2018). It is with this acceptance to change and its relation to adopting behavior and innovation that the study lingers on the Concern-based Adoption Model (CBAM) which is an adoption framework originally applied for the academe but was proven to have the potential to be applied to agricultural projects in assessing the adoption process of innovation (Mize, 2019).

This study was initiated to investigate the adoption of industry partners to the innovative processes and discoveries of university experts and scientists of well-thought, well-planned, and well-researched innovations introduced to them. Bataan Peninsula State University Research and Development Office, in collaboration with the Department of Agriculture-Bureau of Agricultural Research, explored technology innovations in increasing mango production through the development of a sustainable package of technologies extended to participating mango farms and cooperators in Bataan within a two-year project, in which like any other innovations introduced was expected to be adopted and applied continuously.

The study was conducted to describe and understand the experience of participating farmers in the project as to the application of technology learned from the onset of the technology transfer to its termination.

Further, it aimed to determine the factors that influence the adoption of sustainable farming practices introduced by the BPSU pool of researchers and agricultural studies experts to local mango farmers in Bataan.

Materials and Methods

The study is participant-oriented, utilizing the interpretative phenomenological analysis approach which allowed the farmers to express themselves and their experiences in a manner without any alterations and prosecution. Phenomenology is an approach in qualitative research that focuses on the commonality of a lived experience in a particular group where data collected is analyzed for similar phrases and themes that are then grouped to form clusters of meaning (Creswell, 2013).

The study was conducted in the province of Bataan, situated in the Central Luzon region of the Philippines with a total land area of 137,296 hectares. Bataan is composed of 11 municipalities and one component city where agriculture and fishery productions are major sources of income (PSA, 2020). Bataan Carabao Mango became a priority commodity in addressing the gaps on mango production. The Department of Agriculture and the Department of Trade and Industry through the technology transfer of Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development of the Department of Science and Technology (DOST-PCAARRD) and BPSU established science and technology community-based farms (STCBFs) across municipalities. Distributed in agricultural land areas of the province are 40 mango farm sites that were part of the BPSU Projects on Mango. Using purposive sampling technique, participants were farmers from the BPSU Sustainable Mango Production through Science and Technology Innovations and Support Mechanism Project, done on the first cycle, 2017-2018 cooperators with 20 participating farmers, farm owners who serve as managers applying hands-on approach in mango farming were considered, reaching data saturation from five participants; all of which are male with age ranging from 54 to 62 years old, who have been farming for more than 10 years, with 50-100 mango trees to care for.

Interview was the main data-gathering technique to methodically amass inputs from the farmers as they express their experiences and perceptions toward the adoption of technology introduced in narratives, done individually on separate sessions from May to June 2020 using the researcher-made interview guide. A semi-standardized interview was applied where the principal questions are prepared and beyond the specific questions, the interviewer is free to probe as the interview commences (Flick, 2018).

Participants were asked to describe the changes,

problems and challenges they experienced from the application of innovation introduced by BPSU within and after the completion of the project. The interviews were recorded and transcribed. It was then processed by analyzing common phrases grouped in themes and clusters. Description and interpretation of the meaning of the experiences of the farmers are then documented. To ensure data accuracy and reliability, the final draft of the report was shared with the participants for the correctness of the presentation of their ideas. The final paper was then presented to a panel of evaluators for review.

Results and Discussion

The sustainable farming technologies introduced as perceived by the participants varies in time and location. There were farm cooperators who successfully harvested as expected from the adopted technology and there were others who did not succeed and have attributed the possible failure to their location and climate change.

The biggest problem experienced by the participants was their fight against pests that remained to be unresolved despite the use of organic mixes and solutions introduced in the project. Posing as a challenge in the adoption of the new technology is the change they needed to do from the onset and the additional expense they had to allocate to sustain the innovation.

Findings and analysis on the factors influencing the adoption of sustainable farming technology in mango farm cooperators of Bataan resulted in the emergence of seven themes, namely: Acknowledged Awareness; Substantial Information and Logistical Support; Innovation Management; Tolerable Consequences; Seamless Collaboration; Tried Effectiveness; and Refocusing the Innovation. It can be noted that some of the themes and their underpinning dimensions may overlap to some degree.

Acknowledged Awareness. Most of the participants are in their late 50s and early 60s who have been mango farming for many years and which makes the introduction of a new approach and system difficult considering prior knowledge and habits. However, participants were aware of the situation they are facing in their mango farming that a different approach may be able to help.

> "More than 20 years *na ang mangga ko. Ngayon lang namin napabunga"* [My mango tree is more than 20 years old already. We only made it yield now."] Participant 4.

> *"Ayaw magbunga ng maayos"* [They do not yield well]. Participant 1.

> *"Kasi nalulugi kami. Pero ngayon, dahil nga sa* technology *na yan... ahhh, inaabangan na namin ang* season *ng mangga"* [Because before we were losing money. But now, because of that technology… ahhh, we are looking forward to the mango season]. Participant 2.

It is with this level of awareness that participating farmers took part in the adoption of the package of sustainable farming technology introduced to them. While the program intensifies in the download of information, participating farmers progressively became knowledgeable of the proper way of growing mangoes as they put it:

> *"Marami kaming natutunan sa pag aaral namin dun, nalaman namin ang talagang pag-aalaga ng mangga"* [We learned a lot from our studies there, we learned how to care for the mangoes]. Participant 4.

> *"Nadagdagan din po ang kaalaman namin"* [Our knowledge also increased]. Participant 5.

These findings reckon that being aware of a situation, acknowledgment and responsibility leads to acceptance, which supports the study of Hayes (2001) that embracing forms of acceptance and change are applicable in different domains and situations, highlighting the four types of psychological acceptance: embracing, acknowledging, taking responsibility, and approval.

Substantial Information and Support. When the participants were asked as to what they thought of the program, they responded with stories on what they have learned from the program and expressed how happy they were acquiring them.

> *"Basta ako natutuwa ako, una sa lahat, nadagdagan ang kaalaman ko tungkol sa pag mamangga"* [As for me, I'm glad, first of all because I've increased my knowledge about mango farming"]. Participant 4.

> *"Ay oo, nagagamit ko yung mga naituro nila"* [Oh yes, I can use what they taught]. Participant 1.

> *"Pwedeng isulong uli ang* business industry *ng* mango production. *Dahil sa mga kaalaman na yan, nagkakaroon kami ng* confidence" [The mango production business industry can be revived.

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Because of the knowledge, we gained confidence] Participant 2.

The substantial information learned along with the sustenance of logistical support received by the participating farmers led to the cooperation and adoption of the technology introduced.

"*Oo nung una kong kwan ko pa nga nun, yung unang bigay na* 50,000 *para sa* inputs. *Ayun, sila ang nagbigay sakin ng mga... lason na pang* spray... *tsaka, meron kami talagang* seminar *na mga ginagamat nun*" [Yes, when I first (joined), I was even given the first Fifty Thousand for the inputs. Well, they gave me the poison sprays. Also, we actually have seminars where those were used] Participant 1.

"*Malaking bagay kasi meron din naman silang suporta,* inputs, *saka yung ayun nga... yung mga* training" [It's a big (help) because they also have support, inputs, including the training] Participant 2.

"*Malaking katipidan, tapos malaking tulong din, dahil... mam libre yung* paclobutrazol. *Eh ang laking bagay nung* paclobutrazol *kasi kinusdisyon nya yung mangga bago cya pabulaklakin*" [Big savings, and also a big help, because the paclobutrazol is free. That's a big (help) having paclobutrazol because it prepares the mango before flowering] Participant 3.

This finding supports the result of a study conducted in Vietnam on sustainable agricultural practices, where the overall conclusion of the study stated that improved knowledge transferred by extension agents and learning from peers significantly influence adoption (Pham *et al.*, 2021).

Innovation Management. One of the biggest challenges in the introduction of every intervention or change is the management of the actual transfer of innovation and the level of use of the participants. It can be noted that most of the participants unanimously mentioned that the project proponents were by their side every step of the way, from the regular monitoring ocular visits to the provision of books and guide materials as well as consults with the projects' technicians.

"*Kasi ang* BPSU, *hindi lang naman sila nagbibigay ng impormasyon, tapos bahala ka na. Lagi silang merong kasamang* technician, t*saka yung mga* staff *ng* BPSU, *rin lagi din silang dumadalaw, nag-momonitor*" [Because in BPSU, they don't just provide information, then you take care of it. They always have a technician with them. Moreover, the BPSU staff also always visit and monitor]. Participant 2

"Step by step n*aman ang turo nila. Meron kaming* books n*a dapat na sundin na binigay ng* BPSU, provided *naman nila yun. Meron kaming sinusundan eh, may* guide *kami*" [They teach step by step. We have books to follow provided by BPSU. We have a guide to follow]. Participant 4.

"A*hh, pag may problema naman po, nagtatanong naman po kami sa kanila. Kapag may naeencounter po kaming bagong problema, sila po ang nilalapitan namin, yung mga* technician *po nila*" [Ahh, when there is a problem, we ask them. When we encounter a new problem, we approach them, their technicians] Participant 5.

A study by Mwamakimbula (2014) in Iowa State University on the assessment of factors impacting agricultural extension training programs revealed that most farmers are aware of the importance of extension services in improving their production, and prefer to learn by doing demonstrations. This study exemplifies that despite the eagerness of farmers to learn new ways of farming, most farmers are discouraged with the poor organization and coordination of extension training programs. With the approach made by the BPSU pool of researchers in the program, participants in this study felt and experienced full support.

Tolerable Consequences. Participants are aware of the consequences of using the technology introduced. However, they managed to adopt the innovation because they are able to tolerate them. Either because it is inevitable or because they are receiving something in return out of each consequence.

"M*as maganda po yung* harvest *po nya ngayon. Kaso medyo lumaki lang ng konti yung gastos*" [The harvest is better now. However, the cost also increased by a bit] Participant 3.

"*Kaya nga lang talagang magastos,* even though *na malaki ang* cost of production, *malaki naman ang* harvest" [It's really costly, even though the cost of production is big, the harvest is also big] Participant 4.

"*Ang naging problema lang naman yun* manpower, *kasi parang may panglabor ka naman, wala ka naman makuhang* labor. *Kasi nga ngayon, konti lang ang nagiging tao ngayon sa bukid. Nagaagawan na*" [The only problem now is manpower, because even if

you have the money to pay for labor, you can't get laborers. Because now, there are only a few people working in farms. They are in demand] Participant 3.

"Sa ngayon po talaga ang nireresolba lang po namin talaga eh yung sakit po na kurikong. Yan ang naging ano namin, kung papano mapupuksa" [Right now, the only thing we're solving is the *kurikong*. That's what our (problem) is, how to get rid of it]. Participant 5.

"Yung may peste kami ano... yung... cicid fly*... tsaka yung sa kurikong"* [We have pests, there's this cicid fly and *kurikong*] Participant 2.

"Hindi naman nawawala yung peste na yun, basta ahh pagdating ng December *hanggang* May. *Parang ang peste na yan laging nandyan"* [That pest is not going away, when December comes to May. It seems that the pest is always there] Participant 2.

"Marami yung mga ganung hayop eh... maraming pinag-aaralan na mga hayop nun eh. Pati yung panahon ng pag-atake, yung oras ng pag-aapply ng mga chemicals, kwan, ayun, pinag-aaralan namin yun. Yun talaga naaapply yun, pero wala din. Sa dami yata ng mangga ngayon, pati hayop, dumadami din" [There are many such animals… there are many studied animals then, also the time of the attack, the time of applying the chemicals, well, we are studying that. That we really applied, but for nothing. Maybe because of the number of mangoes today, even animals are also increasing] Participant 1.

It is a compromise between the issues that are still unresolved and the facts of reality that made the participants continue to apply the package of technology introduced in the program despite the odds on a level that is favorable to them. As conceptualized in the study of Hjerm (2020), tolerance is a value orientation toward difference, which in the case of the participants in this study applies.

"Eh napabunga nga ng minsan, nagkamurahan naman ang mangga. Ganon din lugi padin, kaya pinapa kontrata ko na lang" [We were able to get a good yield, but the price of mango dropped. We're still at a loss, so I just signed a contract].

Seamless Collaboration. Participants are appreciating each other as members of the group in the program as the project became a common ground for them to establish a network. This could be another driving force that motivated the participants to continue to be part of the program.

"Ahh, yung grupo po, nagkaroon po kami nga palitan ng mga kaalaman sa pag-mamangga" [Ahh, the group, we had an exchange of knowledge on how to farm mangoes] Participants 5.

"Binigyan po kami ng field trip p*ara makita namin yung ibang mga* farm" [We were given a field trip so we could see the other farms] Participant 4.

The groups' collaboration did not just end in the attendance of training and seminars, but they were able to share knowledge and practices among other members. Some members contributed in other means like expanding networks and sharing them to the benefit of others in terms of marketing their harvest. This corroborates the study of Dominguez (2012) on participatory learning, that the process of participation fosters mutual learning, and that participatory learning has its theoretical basis in behaviorism as well as in cognitive and social psychology.

"Yung isang grower ng mangga, po eh.. nakatagpo siya sa Makati *ng* DTI. So, *kinukuha niya po yung mangga na ang presyo po natin dito ay* 1,100. *Pero kinukuha po duon sa* Makati *eh* 1,400" [One of the mango growers. met a DTI (representative) in Makati. So, he takes the mango that our price here is 1,100. But it is taken there in Makati at 1,400] Participant 5.

"Tsaka nakatulong sa market. Ang BPSU n*adala po nila kami sa karapat-dapat na dalhin para hindi po mabago ang presyo. Minsan po kasi sa labas, binabarat na kapag na oversupply tayo. Pero kapag kumpanya po, iisa po ang presyo nila"* [It also helped the market. BPSU took us to the right place so that the price would not change. Sometimes in the market we get low prices especially if there's an oversupply. But when it comes to companies, they have the same price].

Tried Effectiveness. "To see is to believe" could be a cliché but often taken seriously by well-versed and experienced people in a certain field. In this case, the mango farmers. Considering the possible expense, farmers just want to make sure that there would be a profit at the end of the season.

"Ayun, yung production *namin, namemaintain namin, hindi kami nalulugi"* [Well, our production, we are able to maintain, we do not lose (money)] Participant 2.

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"Ahh kasi po ano eh proven *naman na umaani eh"* [Ahh, because it's proven to produce yield] Participant 3.

"Effective *naman eh. ibig sabihin eh, yan naman daw ang talaga ngang, sabi nga daw ang pag-aalaga ng mangga ay para kang nanliligaw ng babae nyan eh. Hindi mo alam kung kelan ka sasagutin eh"* [It's effective. I mean, that's what it is, they say that taking care of mangoes is like courting a woman. You don't know when you will be answered]. Participant 4.

"Yun, sa naibigay po ng BPSU, *yung gumanda po yung sa bunga, yung pagdami ng ani at saka yung sa pagpapabulaklak. Para maganda yung pagpapabulaklak, nakakatulong po sila sa ano namin sa dagdag* income" [That, from what BPSU gave, we got better yields, the yield increased and also the flowering. For the flowering to be beautiful, they can help us with extra income] Participant 5.

Refocusing the Innovation. Almost all of the participants are seasoned mango farmers who have been in the business for decades and have prior knowledge and systems applied in their farms, most of which are with contracting services with operators offering care for mango farms by spraying chemicals on a percentage transaction.

"Ahh wala, dahil nga kontrata. Pero nung araw, natatandaan ko, wala namang spray spray *na ganyan, talagang pausok lang pero nagbubunga ang magga eh"* [Ahh none, because it's on contract. But before, I remember, there was no spraying like that, it was smoking but the mangoes were producing] Participant 1

"Dati kasi, kontrata yan. Syempre pagkakontrata may percentage *yan eh... kung* 30 o 70 *ganon. Basta pag may inani, meron akong matatanggap. Pero nung ako na, talagang palaging lugi, walang kita"* [Because before I'm in a contract. Of course, when there is a contract, there is a percentage, if it is 30 or 70 then as long as there is a harvest, I will receive something. But when I did it, I was always at a loss, I had no income] Participant 1.

"Dati, yung mangga naming pinapaspray ko lang, may contract a*no kami, una* 60/40, 50/50 *naging* 70/30 *kaya bumaba ng bumaba, hanggang sa hindi na nila binobomba yung mangga ko, dahil nga hindi na nila macontrol yung peste"* [Previously, I just have our mangoes sprayed, we had a contract, first 60/40, 50/50 until it became 70/30. So, it went down and down, until they stopped spraying my mangoes, because they couldn't control the pest anymore] Participant 2.

"Bago-bago pa lang din po ako sa pagsspray, basta ako, hindi ko gaanong nilalagyan ng abono, tapos yung sa pruning, hindi ko po talaga ginagawa yun. Dahil nuon, pinapakontrata ko lang" [I'm new to spraying, I don't put much fertilizer, then with pruning, I don't do that. Because I just have it on the contract] Participant 5.

However, from the program, they were taught to care for the mangoes with specified technology to apply without the contracted rates they usually get from contract operators. At the onset and throughout the program, the participants were able to apply the technology as part of the program.

"Hindi pati pagpruning pati pagsspray. Ayun tinuturo nila yun. Inaapply namin yun" [No, even when pruning or spraying. That's what they teach. We are applying that] Participant 1

"Yung sa mga seminars, training, *nadadagdagan kami ng kaalaman sa paggamit ng mga pestisidio"* [Those seminars, training help increase our knowledge on the use of pesticides] Participant 2.

"Ano po, bali nagkaroon na ng yearly na pagpupruning, kapag po may pangit na dahon, tapos kapag hindi na kundisyon ang dahon, inaapplayan yan ng paclobutrazol, *tapos yung* GAP Practices, *ayun inaapply po"* [There has been an annual pruning, when there are ugly leaves, then when the leaves are no longer in condition, paclobutrazol is applied, then the GAP (Good Agricultural Practices) is applied] Participant 3.

"Nung araw, basta papaspray mo lang, spray lang ng spray, kahit na masukal. Ngayon hindi na. sanitary pruning *na"* [Back in the day, as long as you just have it sprayed, even if it's heavily weeded. Now not anymore; we do sanitary pruning] Participant 4.

"Yung naano ko yung sa pagpupruning bago magsimula, nagkaroon muna ng mga flashing, s*a paggamit ng* eurea *para... magmura yung dahon nya. Tapos kailangan din, maging... tagos ang* sunlight s*a mga puno, yung nagpupruning, ayun ang dapat namin gawin"* [What I (learned) on pruning before starting, there should be flashes first, using eurea to stimulate the leaves. Then we also need sunlight to penetrate the tree and that where the pruning is done. That's

what we should do] Participant 5.

Nevertheless, some of the farmers went back to their old practice of contracting services to operators to have their mangoes cared for in exchange for an agreed percentage while others find the technology beneficial that they are the ones doing the contract transactions. A shift in the mango farmers' perspective in the potential of mango farming to higher profit margin.

> *"Ganon din lugi padin kaya pinapa kontrata ko na"* [It's just the same, so I just have it on contract] Participant 1.

> *"Kasi nalulugi kami... pero ngayon, dahil nga sa* technology *na yan... ahhh, inaabangan na namin ang* season *ng mangga kung* ready *na yung mangga namin nagsspray na kami, iniisip na namin siyang pangkabuhayan"* [Because we are losing money. But now, because of that technology… ahhh, we are already looking forward to the mango season when the mangoes are ready, we spray. We are already thinking about it as a livelihood]

> *"Ganon pa din,* 70/30, *ngayon, kami naman ang nagsspray"* [Still the same at 70/30, now, we're the ones spraying] Participant 2.

> *"Basta ang kakontrata ko, nagsheshare din kami, syempre, mahirap ng itapon yung mga natutunan mo eh. Kung baga, nasa heart and mind mo na yun eh"* [Anyway with my contractor, we also share ideas, of course, it's hard to throw away what you've learned. It's like, it's already in your heart and mind] participant 4.

As participants refocus the innovations introduced and as they get to learn how to embrace the inevitable and utilize the possible, the traditional way of farming mangoes as what was culturally dictated from the simple practice of consciously neglecting matured mango trees as it yields on its own, participant got acquainted, exposed and acculturate in the process. As the study of Doucerain (2019) revealed, that acculturation consists of the creation and flexible use of new development of multicultural mind and of changes individuals stand on different cultural practices which influence long-term adaptation by promoting cultural fit between people and their cultural environment.

Conclusion

It can be concluded that despite the age and the experience of the mango farmers in Bataan, they are still willing to try new approaches in mango farming that can help in the production growth. It is with their mindfulness of the situation that necessitates change despite the challenges, consequences and compromises associated with it. Substantial information along with logistical support empowered the participating farmers to gain confidence to embrace the new technology, simultaneously providing support and guidance reinforced by seamless collaboration among the group formed experiential evidence that the transfer of technology was managed well. It was in this firsthand experience that participants were able to refocus and modify application selection.

Recommendations

It is recommended that technology transfer projects and programs be mandated to start with a session that will focus on how the participants acknowledge the need for what is being introduced to facilitate use and sustainability. The duration, content, and management of methods of implementation should be thoroughly evaluated to ensure substantial content that will challenge participants to fully engage and adopt its application and objectives. The university should also take into account the provisions for logistical support to encourage participation in projects/programs being implemented. However, it should be with utmost vigilance and assessment on its superficial influence on participation. It is, likewise, recommended that support groups and follow-throughs be established and not neglected as socialization and feeling of belongingness matters in sustaining the adoption of innovations being introduced and as the culmination of the project and program is reached, continuous improvement on the project termination plan be made to properly leave beneficiaries to transition toward independence and sustainability.

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