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CEO & Director (Academics)
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Dear Associates

Welcome to each and every one of you congregated for the prestigious IMRF's 130th International Gathering - Proceedings of the International Conference on Multidisciplinary Academic Research Thailand 2019 hosted at Asian Institute of Technology Conference Center, Pathum Thani, Bangkok, Thailand organized by IMRF Institute of Higher Education & Research - Thailand Chapter which is considered to be one of the premier events for the distinguished academic and research cult.

We know that an academic conference is a symposium for inventive academicians and imaginativeresearchers to give academics an opportunity to present their academic works, concepts and newdiscoveriesand to exchange their ideas and develop their works and also to share idea in presenting fordevelopment in the new research and topics and so forth. Together with academic or scientific journals,conferences plausibly provide a central channel for exchange of information among earnest researchers.

IMRF with its Academic Chapters in many Countries, since inception, has a great academic, research and socialpriorities to promote the spirit of values and orientations in multidisciplinary research functions of educationby working out in dexterity required by the integrity of a sophisticated social world order duly transmittingcentral heritage with scientific bent of mind forming socialization process in respect of reformation of attitudesto confer a serene status for a rational being called man on this civilized planet, of course, from the threshold of Ratna Prasad Multidisciplinary Research and Educational Society.

IMRF with its collaborative organizations, has left no stone unturned for the accomplishment of its vision and mission catering its influentialservices in the academic and research disciplines comprising the streams of Human Rights, Social Sciences,Arts and Education, English Studies, Business Sciences, Engineering Sciences, Mathematical Sciences, LifeSciences, organizing International Conferences humbly witnessing the virtuous presence and innovativepresentations of investigating pioneers, potential leaders, promising researchers, intellectual academicians,working faculty, industry magnates, advanced educationists, eminent scientists, rational thinkers, earnestscholars and superior students with their bonafide work of discovery from as many as 50 and more countriesin the world (with their recurring presence) including home towards showcasing their professionalperformance with excellent communication skills based on their accumulated experience in the fieldsconcerned successfully.

Globalization is a fact. Its internalization process integrates multidisciplinary fields to embark on an adventurein the realm of academics and research. As such, this conference by International Multidisciplinary ResearchFoundation (IMRF). I am pleased to unveil the fact that this Copy of Proceedings marked with ISBN No 978-93-86435-95-8 presents an educative network of research with strength of quality, originalityand contribution to knowledge of significant fields of multidisciplinary realms duly identified by the solemnresearch portals and academic destinations in the world.

While presenting you with this sonata of latest academics and research findings, I humbly place on record myloyal acknowledgement of sincere appreciation, due recognition and heart-felt thanks to all intellectual paperpresenters, article contributors, members on the esteemed Editorial Board, centres of higher learning incollaboration with IMRF, foreign-national delegates, erudite plenary speakers, scholarly participants and allthose who are directly or indirectly in conformity with this IMRF conferences from home and abroad for theirrighteous everlasting support in one and all aspects and my sincere thanks to Asian Institute of Technology Conference Center, Pathum Thani, Bangkok, Thailand. for their ever dynamic support and cooperation. Gratitude is attitude!

With effusive thanks,

Dr.Ratnakar D. Bala
Conference Chairman

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HUMANITIES

COMMUNITY SERVICES AND THEIR IMPACT ON LEADERSHIP QUALITIES AMONG COLLEGE STUDENTS OF WEST GODAVARI DISTRICT OF ANDHRA PRADESH – A STUDY

DR. SR. MARIETTA D'MELLO

Abstract: The present Education through the curricular or Institutional training identified the importance of introducing the functioning of official training programmes like NSS and NCC for students to improve their moral stature, leadership qualities and organizational capabilities with selfless motives. While serving the society as a volunteer or as a public servant or as an organization the students need to realize that "Discipline" is the key success in any field of their life. Thus, the Educational institutions with the introduction of NSS and NCC activities rightly trying to improve the standards of the students in respect of the discipline, leadership and volunteering capabilities.

Unless the present youth realizes that a part of their life should be service to the humanity then only the total structure of the society will become progressive and peaceful. To reach such a tranquil state of mind, students should be trained systematically and simultaneously with academics. Community participation and community services provide our educational institutions with an effective means to become committed communities and to achieve the academic aims and plans. Thus opening a door for our young people to enter and grow in leadership, which is transformational.

The aim of NCC is to train young boys and girls to be better citizens and future leaders in all walks of life. The participation in NCC programmes the students will be benefited by developing the qualities of character, courage, discipline, leadership, and secular outlook, spirit of adventure and sportsmanship and selfless services to become useful citizens. NCC also plays a unique role in the community development. The NCC participants actively involved in some of the activities namely a) Adult Education b) Environment c) Social services and d) Health etc.

Participation in NSS programmes gives a broader scope for the students to involve in various activities. For example: - a) Environment Enrichment and Conservation, b) Health, Family welfare and Nutrition programme, c) Awareness for improvement of the status of women d) Social Service programmes, e) Production oriented programme, f) Programmes for working during emergencies, g) Education and Recreation etc.

Active participation of students in the above mentioned NSS programmes helps in developing qualities like character, courage, resourcefulness, confidence, decision making, democratic attitude, leadership skills etc.

Keywords: Moral Stature, Selfless Motives, Discipline, Volunteering Capabilities, Transformational, Tranquil, Enrichment, Conservation.

***

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A PREVIEW ON WORKING MEMORY AND SENTENCE COMPREHENSION IN BROCA'S APHASIA

LAU YOKE LIAN

Abstract: Working memory is closely related to sentence comprehension in patients with Broca's aphasia. Therefore it is one of the major research topics in sentence comprehension of Broca's aphasic patients. It seems that differences in working memory capacity of the patients might influence their sentence comprehension outcome. The study research on relation between working memory and sentence comprehension of Broca's aphasic patients in order to reveal the status quo and the possible research gap in this field.

***

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SELF-REGULATED LEARNING (SRL) AND ACADEMIC PROCRASTINATION AMONG COLLEGE STUDENT

RIZKA P. R. ANNISA, MUHAMMAD I. A. MAJID, NASHIF A. R. FANANI, NUR WIDIASMARA

Abstract: Students often have difficulties working on their college assignments on time. The number of assignments and activities outside the lecture make students have to divided their time well. However, many students also chose to postponed their duties until the deadline runs out, as known as procrastination. On the other hand, students who have good self-regulation can manage their tasks optimally and on time. This study was aimed to examined the relationship between self-regulated learning with academic procrastination. Respondents in this study were psychology students of Universitas Islam Indonesia class of 2015, 2016 and 2017, with 64 students consisting of 32 women and 32 men. Data retrieval method in this study used a scale *Self-Regulation of Learning Self Report Scale (SRL-SRS)* and *Shortened Version of The Procrastination Scale.* The results of the analysis showing correlation of t = -.276. This shows that there is a significant negative relationship between self-regulated learning with academic procrastination in psychology students of Universitas Islam Indonesia. This means that the higher student's self-regulated learning, the lower is the academic procrastination.

Keywords: Academic procrastination, psychology student, self-regulated learning (SRL).

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THE CORRELATION BETWEEN ACADEMIC MOTIVATION AND ACADEMIC PROCRASTINATION AMONG PSYCHOLOGY COLLEGE STUDENTS OF UNIVERSITAS ISLAM INDONESIA

NASHIF A. R FANANI, RIZKA P. R. ANNISA, MUHAMMAD I. A. MAJID, NUR WIDIASMARA

Abstract: Academic motivation is one of the things that affect success on study. students are often constrained by procrastination. The aim of this study is to find out the correlation between academic motivation and the academic procrastination on psychology students of Universitas Islam Indonesia. The subjects of this research were 64 psychology students from Universitas Islam Indonesia, 32 men and 32 women. The sample selection method is conducted by random sampling, This study uses quantitative method. The data collection methods were carried out using a questionnaire consisting 2 scales, namely Academic Motivation Scale (ADS) and Tuckman Procrastination Scale, while the data processing method uses the SPSS 22 correlational test. The result obtained after the coefficient correlation is -0.0288, correlation is negative, and p = 0.01 (<0.05), which means hypothesis are accepted. Based on these results, the conclusion is higher the academic motivation, lower the academic procrastination, vice versa.

Keywords: Academic Motivation, Academic Procrastination, College Student.

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COMPARISON BETWEEN MALE AND FEMALE PSYCHOLOGY STUDENTS REGARDING ACADEMIC PROCRASTINATION, ACADEMIC MOTIVATION, AND SELF REGULATED LEARNING IN UNIVERSITAS ISLAM INDONESIA

MUHAMMAD I. A. MAJID, NASHIF A. R FANANI, RIZKA P. R. ANNISA, NUR WIDIASMARA

Abstract: The aim of this study was to determine the differences of academic procrastination, academic motivation, and self regulated learning levels on undergraduate students from perspective of gender. Respondent of this study consist of semester III, V, and VII students totaling 140 students consisting of 32 male and 108 female students majoring in psychology at the Universitas Islam Indonesia. The scale that we used to measure self regulated learning was *Self Regulation of Learning Self Report Scale (SRL-SRS)*, for academic motivation used *The Academic Motivation Scale*, and for academic procrastination used *Tuckman Procrastination Scale (TPS).* The result of this study was p=0.527 used Mann whitney test for self regulated learning, while p=0.23 for academic procrastination and p=0.606 for academic motivation used Independent sample T-test with helped of software SPSS version 23.0. This study concluded there was no significant correlation between academic procrastination, academic motivation, and self regulated learning from the perspective of gender.

Keywords: Role of gender, Academic Procrastination, Self Regulated Learning, Academic Motivation

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A COMPARATIVE STUDY ON THE ASPECTS OF BASIC WORD ORDERS AND THE VARIATIONS AND THE INTERACTIONS WITH THE ICONICITY OF DISTANCE PRINCIPLE IN ENGLISH AND KOREAN

HYEMI PARK, HYANGMI LEE, DAYOON BAEK

Abstract: The purpose of this paper is to investigate the aspects of basic word orders and their variations in English and Korean, and the interactions with the iconicity of distance principle for the basic word orders and their variations. The basic word orders are discussed in terms of word orders within the major constituents such as verb-object constructions and multiple adverbial constructions. The followings are argued in this paper. The first claim is that there are basic word orders in Korean as well as in English and the canonical symmetric arrangement between the (basic) word orders in English and Korean. The second claim is that basic word orders and their variations can be equally accounted for in terms of distance principle of iconicity, even though the principle applies more strongly for English. (Pusan National University)

Keywords: Iconicity, Locative Alternation Construction, Multiple Adverbials, Word Order.

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GENDER EQUALITY

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Abstract: The word gender describes the socially-constructed roles and responsibilities that societies think about acceptable for men and women. Gender equality implies that men and women have equal power, equal rights and equal opportunities for monetary independence, education, and personal development. Gender discrimination can be seen at all ages and stages of development over the Globe. Women's management may be a crucial facet of achieving gender equality. It includes increasing a woman's sense of self dignity, self-worth, decision-making power, access to opportunities and resources, power and management over her own life within and outside the house, and her ability to result in the amendment. Nonetheless, gender problems aren't centered on girls alone, however on the connection between men and women in society. The actions and attitudes of men and boys play a vital role in achieving gender equality. Gender equality may be a right, however, our world faces a persistent gap in access to opportunities and decision-making power for women and men. Women have fewer opportunities for economic participation, less access to basic and better education, larger health and safety risks, and fewer political participation than men globally. Guaranteeing the rights of women and giving them opportunities to achieve their full potential is crucial not just for attaining gender equality however conjointly for meeting a good social order and prosperity. Women contribute to the health and productivity of their families, communities, and countries, making a ripple result that advantages everybody.

Keywords:
***Gender*:** Socially-constructed roles and responsibilities that societies consider appropriate for men and women.
***Gender equality*: Equal power and opportunities for men and women.**
***Gender discrimination:* Inequity towards men and women that affects the lives of both genders.**

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THE 21ST CENTURY SKILLS IN THE PRIMARY ART EDUCATION CLASSROOMS: UNDERSTANDING TEACHING AND LEARNING IN BRUNEI DARUSSALAM

DR SHAMSINAR BINTI HAJI HUSAIN

Abstract: In this global society with the 21st century education system, there is a critical need for students to be more knowledgeable and skilful in art field. But, in order to fit the learning needs of our students, it is crucial to examine the way we teach the subject. The pedagogy of art of the 21st century has been changed significantly, highlights that art teachers should know how to adapt the pedagogy effectively. Today, the teaching of art education needs to be highly-effective where teachers should be able to integrate the use of technology in learning, able to increase students' participation and involvement in meaningful and challenging learning environments. The teaching also needs to combine technology with artistic skills such as the 4C's of Creativity, Critical thinking, Communication and Collaboration. In our context, the new National Education System, "Sistem Pendidikan Negara 21 (SPN 21) prepares students' learning to be more innovative, balanced, well-rounded, able to apply technology for learning, strong in communication and collaborative skills, able to think creatively, critically, analytically and practically. Understanding the 21st century teaching and learning of primary art education provides a new insight into the quality of student learning development and achievement. Therefore, a study was conducted to examine the 21st century teaching and learning of primary art education to improve the teacher education in Brunei. The study employed a qualitative approach in data collection and analysis. It involved classroom observations and interviews with 10 qualified primary art teachers. The findings show that the teachers enabled to integrate the use of technology and in this way, students are motivated to learn art actively. However, the study highlights the needs for development and improvement in teaching and learning the artistic skills of the 4C's.

Keywords: Artistic Skills, Education System, Pedagogy, Teacher Education.

***

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COMMUNICATION STRATEGIES EMPLOYED BY THAI UNDERGRADUATE STUDENTS IN THE FACULTY OF LIBERAL ARTS IN ENGLISH FOR BUSINESS MANAGEMENT AT KHON KAEN UNIVERSITY, NONG KHAI CAMPUS

DR. PARICHART TOOMNAN

Abstract: Communication strategies (CSs) allow EFL/ESL learners not only to convey and negotiate the message but also to maintain the conversation when communicating with interlocutors. The purpose of the present study was to examine the frequency of use of communication strategies employed by 46 undergraduate students majoring in English for Business Management, studying at the Faculty of Liberal Arts, Khon Kaen University, Nong Khai Campus (KKU, NKC) in the Northeast of Thailand, as well as the relationship between the use of communication strategies and students' strategy awareness. A communication strategy questionnaire (CSQ) was conducted. The data obtained through the questionnaires were analyzed by the descriptive statistics, the Analysis of Variance (ANOVA) and the Chi-square tests. The results indicated that significant variations were found according to students' strategy awareness. There were significant variations under the SCM and SMC categories. Pedagogical implications of the study are presented and discussed.

Keywords: communication strategies, strategy awareness

***

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WOMEN'S ATTEMPTS TO DEFY PATRIARCHAL SUBJUGATION IN ANITA NAIR'S *MISTRESS*

DR. R.MADHAVI

Abstract: *Mistress*, a novel by Anita Nair, deals with the subjugation of women by patriarchal hegemony. In this novel the author depicts women from across the different rungs of society grappling to find meaningful existence. They willingly enter into relationships that are taboo and detrimental to their well being. This paper examines how Nair's novel portrays the defiance of women who are not afraid to fight for their rights. The results of these acts of defiance are unimaginably punishing, yet these women act as would their western counterparts. Normally such acts of violation of societal norms could prove lethal to the Indian woman. These middle-class Indian women boldly follow their dreams and fulfil their heart's desires with a vengeance aiming at proving their worth in a man-made world. The paper attempts to study women in contrasting roles as contenders for traditionality and on the contrary as breakers of societal norms held sacrosanct.

Keywords: Patriarchy, Subjugation, Meaningful Existence.

***

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WOMEN EDUCATION - *AN INVESTMENT WITH FULL RETURNS*

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Abstract: It is no secret that women too can contribute to the development of society. The role of women in development and society has always been undermined by male chauvinists. Gender equality is one of the issues that has always caused struggle between the two sexes. Gender, class, race and ethnicity are the issues the modern woman continues to navigate away. Women are struggling to move away from these issues, and contribute positively to sectors such as education, health, business and to the same as men, women can be useful in teaching and also acquire knowledge to apply it positively in society. To educate girls is to reduce poverty.

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STRENGTHENING SOCIAL SCIENCES AND HUMANITIES FOR A SUSTAINABLE SOCIETY

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Abstract: The United Nations General Assembly has taken a resolution for Sustainable Development Goal for the year 2030. This resolution itself is a danger bell, that the Humanity is in Crisis. "The hour of crisis is the hour of self examination, and the right self examination lies nearer to the decisions taken in the past". If we grope into the recent past of humanity we find the roots of the present crisis in the process of Modernization or Westernization. The Empire of Industrialization has built on the foundations of Science and technology which is basically empirical, logical and analytical in nature and the basic philosophy behind industrialization is utilitarianism which promises maximum good to the maximum number of people. Today we see that western Imperialism and colonization has influenced almost all the people of the world and the success of western civilization in terms of material affluence has forced everybody to believe that Science and Technology is the only way out for the development. Hence in the present educational Scenario Science and technology enjoys a high profile and the Humanities and Social Sciences vice versa.

While the whole world is running behind Science and Technology, an American - expert on thinking Edward De' Bono says – "The last millennium has not been a success. We have made huge advances in Science and Technology but have still been let down by excellent and limited ways of thinking". In his book "New thinking for new millennium "Admitting the drawbacks of Western educational system he says " Education is obsessed with Literacy and Numeracy, yet operacy (skills of doing) is almost entirely neglected. " The alarming rate of increase in the number of suicides and homicides in the affluent countries have prompted the American Psychologists for further research on human mind I.e. , the software of brain. The findings of research provides a firm base to defend the Social Sciences and humanities in the field of education. Even in Andhra Pradesh the ignorance on the part of parents and also teachers who misguide their students is creating havoc in the lives of our youth who are the future of our country and future oh humanity.

In the field of education it is a traditional practice that students with higher I.Q. levels are considered highly intelligent and they opt for Science subjects and students with lower I.Q. are considered to be less intelligent and they opt for Social Sciences and Humanities. " All these years we were believing that intelligence has to do with thinking, analyzing, remembering, comparing , applying, appearing for exams, obtaining high marks etc. These qualities, it is argued lead to top position, lucrative pay packages palatial houses, imported cars, security, success holidays etc. Consequently people work hard to develop their I.Q. and ignore their emotions. How far it is correct to nurture our I.Q. ignoring E.Q. or nourishing the rational mind and ignoring the emotional mind or nourishing sciences and technology ignoring Humanities and social Sciences. Now the question arises whether human beings have two minds? Research done in the field of Neurobiology gives a positive answer to this question.

In 1980s two American Psychologists, Peter Salovey of Yale University and John Mayor of University of New Hampshire coined a phrase called Emotional intelligence. Science reporter of New York Times adopted it and introduced it in his best seller "Emotional intelligence why it matters more than I.Q. ". According to Goleman I.Q. accounts for only about 20% person's success in life and the balance can be attributed to emotional intelligence. Emotional intelligence is also called as E.Q. the Emotional Quotient. In a lay persons language this could be defined as what feels good and how to get from bad to good. A more formal academic definition refers to Emotional awareness and emotional management skills which enables you to balance emotion and reason so as to maximize one's own long term happiness. Emotional intelligence is ability to balance between head and heart or thinking and feeling parts of the mind.

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Basing on the research done in the field of Neurobiology individual person should nourish one's own mind with Science and Technology on one hand, Humanities and Social Sciences are the other. Man's greed has already disturb the balance of Nature and now it is on the verge of creating imbalance in Human mind by forcing the children to study Science and Technology, irrespective of the capabilities of an individual child. Unilateral development of Science and Technology ignoring Social Sciences and humanities made the human society unsustainable. Increased conflict,mental sickness, crime, suicides and genocides shaking the foundation of human existence. Since emotional intelligence is moving from bad situation to good schooling of E.Q. is the solution for this human tragedy. Enriching or balancing our syllabi with Social sciences and Humanities will help to create balanced individuals with a rational mind and a feeling heart.

Globalization is an outcome of utilitarian thinking. Even in this age of Globalization the experts in organizational behavior opine that the work force with technological skills need to have peoples skills. Along with technological knowledge the managers need to have the knowledge of Social sciences and Humanities. Understanding other person's culture, social background and emotions, aids a person to empathize with peers and subordinates. Today distances and national boarders are disappearing rapidly and management is no longer confined to the National borders. Along with Science and Technology if a person has social skills he will be successful in his work place. Here social consciousness and emotional awareness play an important role and these can be inculcated through social sciences and humanities.

The people and races with ethnocentric views suffer from parochialism and parochialism is detrimental to human society. Hence creating individuals with empathy and emotional intelligence is need of the hour for a sustainable human society. Social sciences and Humanities is the remedy for the present social malady.

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WOMEN EMPOWERMENT
THEME: REALIZE YOUR POWER – REALIZE YOUR IDENTITY.

KRITIKA JAIN

Abstract: Empowerment can be defined in many ways, however, when talking about women's empowerment, empowerment means accepting and allowing women who are on the outside of the decision-making process. women are empowered when they are able to access the opportunities available to them without limitations and restrictions such as in education, profession and lifestyle. Feeling entitled to make your own decisions creates a sense of empowerment.

Content: To attain this one has to realize their power and also the identity,because its she how underestimate her own determination and ability,so its important to realize the girl power, only then one could achieve and inspire others to be strong.

I do not wish women to have power over men, but on themselves.

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SACRIFICIAL MOTHERHOOD OR EMPOWERMENT: WHAT DO NARRATIONS FROM SANI YI WOMEN EMBROIDERY TRADERS TELL US?

GUO SISI

Abstract: This paper attempts to explore the process in which Sani Yi women embroidery traders in Shilin, Yunnan Province, China, empower themselves through economic activities engagement. In the past, Sani Yi men were viewed as active subjects in economic undertaking. In contrast, Sani Yi women were traditionally restricted in domestic life and agricultural responsibilities. The conventional constraints on women have resulted in women's subordinate status. With growing social change, an increasing number of women presently enter into the market to participate in economic activities. The research shows that in many cases Sani Yi women are compelled to participate in different types of economic activities when their husbands are unable to provide enough economic support for their families. Meanwhile, the fact that economic participation entails change in the women's lives and in relations with men cannot be ignored. The engagement between Lessinger's idea of 'sacrificial motherhood' and Kabeer's perspective on 'women's empowerment' draws attention to the key root and the result of women's economic undertaking. This paper is based on personal narrative approach to explore three Sani women's experiences and life trajectories. Its objective is to examine the motivation of Sani Yi women's economic participation. It also draws attention to how each woman's economic engagement allows her to transform the household gendered division of labor, acquire decision-making power, break the limitations on women's spatial movement, change women's attitude towards domestic violence, and gain social status. The study leads to the conclusion that the conventional limitations on Sani Yi women are destabilized gradually even it still continues to exist, and gender relations between Sani Yi women and men are not fixed and rigid but flexible and dynamic.

Keywords: Economic Participation, Gender Relations, Sacrificial Motherhood, Sani Yi Women Embroidery Traders, Women's Empowerment.

Introduction: According to the cultural norm and social expectation in Sani Yi society, the Sani Yi males were expected to be the active participants in economic undertaking who enjoy the higher social status both in the household and in the community. On the contrary, Sani Yi females were expected to be good housewives who confined in family life and took on various works, such as farm work, child rearing, domestic chores, and embroidering. Even Sani Yi women in practice also contributed to the family income by participating in productive work, weaving, embroidering, making clothes, their contributions and experiences are less visible and easily overlooked.

Furthermore, in terms of embroidering, according to both Chinese and Sani script records and stories, Sani embroidery has prevailed for centuries from the Ming dynasty (Bi & Wang & Li et al, 1996). Over time, Sani embroidery gradually become an indispensable part of Sani people's life and an important part of Sani culture that pass from generation to generation. There are a few songs and poems widely spreading among the Sani people in Shilin, which not only vividly describe the Sani embroidery practice, but also precisely elucidate the social reproduction of embroidery as women's role. In the historical time, Sani women learned embroidering and domestic works from their mothers and same sex peers. Sani girls, following their mothers' way, have to learn how to embroider, and how to make clothes for home use during their childhood. When they grew up and had their own family, they traditionally were responsible for preparing the clothes for their husbands and children, not only the usual clothes for daily wearing, but also the fancy clothes for special occasions.

A number of studies found that women are the main producers of needle work around the world, cross the nation, race, ethnic, and class (Parker, 1984; Clare, 1994; Schein, 2000; Aranya, 2008). Embroidering is viewed as feminine skill that is not only a social and psycho-social product, but also has the effect of excluding women from powerful positions and prestige, and it limits women's action within the domestic sphere (Parker, 1984). However, along with social change, the skill of embroidering, which

inherited from their mothers and same sex peers through domestic transmission, has laid the foundation for Sani Yi women embroidery traders to enter into the market and earn income from their feminine skill in the present days. This paper attempts to explore how have Sani Yi women embroidery traders been able to seize new economic opportunities, and also tries to examine how embroidery as a contested space for Sani Yi women embroidery traders' empowerment.

Discussion on Theoretical Debates: Johanna Lessinger (2001) proposes the idea of "sacrificial motherhood" in her work, refers to women who will do anything to preserve their children and their households intact. Sacrificial motherhood as the central cultural sanction that impels Chennai market women's economic engagement in south India. These women's sacrificial behavior, in terms of take up petty trade, illustrate the importance of their work for maintaining their family well-being, and thus their works are also viewed as an extension of mothering.

The concept of women's empowerment was derived from women's organizations across developing countries, and it is highly discussed by numerous scholars (Stichter, 1988; Scheyvens, 1999, 2000; Gupta and Yesudian, 2006; Kabeer, 2017), but it has not been clearly defined yet. I would like to draw on Kabeer's idea of women's empowerment here. She argues that empowerment refers to the expansion in women's ability and capacity to make strategic and meaningful life choices in a context where such ability and capacity have previously been denied to them. In other words, empowerment should reflect a process of change, or a process of power shifts (Kabeer, 1999; 2017).

Methods and Sources of Data: The Yi is one of the fifty-six ethnic groups in the People's Republic of China, and they are a Tibeto-Burman-speaking people (Harrell, 2001). The Yi were divided into four main groups by their locations: The Northern Yi; the Eastern Yi; the Southern Yi; and the Southeastern Yi, which with four major subgroups, and Sani is one of these major subgroups (Bradley, 2001). The Sani Yi people mainly live in Shilin and Puzhehei. In this paper, I will fully focus on the Sani Yi who living in Shilin. This study is based on data collection during 2017-19, when I spent several times in my field site, Shilin Yi Autonomous County. It is located in the middle of Yunnan Province, southwest part of China, only one and half hours by bus from the capital city, Kunming.

There are two main methods in which many of studies used to analyze women's empowerment: evaluate changes in women's life situations by a serious of externally criteria based on certain context; and evaluate changes in women's lives through women's own interpretations and perspectives (Kabeer, 1999, 2017). At the time of study, I interviewed 30 Sani women embroidery traders at the very beginning by using the first approach. This approach draws attention on women's access to resources, household gendered division of labor, decision-making power, economic self-reliance, spatial mobility, women's rights to equal property inheritance, gender preference, attitude towards domestic violence, etc. (Gupta & Yesudian, 2006; Scheyvens, 2000). Furthermore, I used the second approach to focus on women's own narration of their experiences and life trajectories. This approach shows how women acquire self-consciousness, and how their relations with family members, especially the relations with their husbands, and society have been changed. Thus, both the external criteria evaluation and personal narrative approach will be applied in this paper to explore three specific Sani women embroidery traders' life.

Sani Yi Women Embroidery Traders Emerge within the Dynamic Economic Opportunities: In the early 1980s, China developed a family-farming system in which dividing up collective land and contracting plots to individual households (Judd, 1944; Bossen, 2002). This system formally called the "household responsibility system (*jiating lianchan chengbao zerenzhi*)". It was gradually extended across the country in the early 1980s, it was officially introduced in Shilin County by 1982 (Bi & Wang & Li et al, 1996). The land and other agricultural resources were divided among the households, where they took responsibility for agricultural production and resources management. Benefited from the household responsibility system, Sani Yi people gained freedom over the crops they would plant, and their living standard has been eventually improved. However, there are different types of land possession-based

problems emerged, which have resulted in an increasing number of Sani Yi people to enter the non-agricultural work space in order to look for new opportunities.
First of all, during the past four decades, the increase in the number of households has resulted in the cultivated land holding of each family decreasing in size. Some Sani Yi people who did not have enough cultivated lands, especially the young generation, have to looking for other jobs outside in order to earn income in new occupations. Secondly, for some Sani Yi families, they have lost their cultivated lands to make a contribution for the recent land reform policy. This was especially the case for those who live nearby the urban area. They have had to sell their lands to local government in order to support tourism projects and economic development. Thirdly, for some Sani Yi families, they plant some cash crops with low prices, and thus their agricultural productions do not provide enough income over the whole year. These people, they usually choose to leave their farm work for their parents or rent out their lands to their relatives or friends, and they are looking for jobs outside the village.

During the same period of time, the rural marketing system has been revived gradually in the early 1980s in Shilin (Bi & Wang & Li et al, 1996). Sani Yi people's living standards and the extent of convenience were improved rapidly. But most importantly, the local market revival provides the space for Sani Yi women to participate in economic activities. Soon after, the embroidery trading spread quickly among Sani Yi women in Shilin.

Meanwhile, after the economic reform started in the early 1980s, ethnic tourism was promoted by the Chinese state for the local economic development and foreign currency (Swain, 1990). With ethnic tourism was promoted by the government, Shilin as a very famous tourist destination was exposed to the outside world. It drew both domestic and international tourists. The primary attractiveness of Shilin destination lies in the specific limestone landscape, but the unique Sani Yi culture as the secondary attraction cannot be ignored as well. The external environment has provided new economic opportunities for Sani females entering the market to sell their embroidered products. Sani female embroidery traders have emerged within the dynamic economic opportunities. To understand the Sani Yi women embroidery traders' experiences and life trajectories, three specific case studies will be presented in the next section.

Three Sani Yi Women Embroidery Traders' Life Stories:
Case # 1: Linda: Linda is in her mid-fifties. She left her natal family and joined his husband's residence after they were married in 1991. Linda's husband used to work in a fertilizer company in the county, and Linda herself stayed at home to take care of her family. She was the main labor source work on the farm, take care of parents-in-law and children, and take on domestic chores. Despite Linda's husband had regular salary every month, he did not send any penny back for them since all of his salary were used for his food and drink.

While Linda was planning to find another way to earn more money in order to provide a stable life for her daughter, her friends, who live in the same village, invited her to go to sell embroidered products in Beijing. Partly inspired by the new economic opportunities, and partly pressured by her family's financial demands, Linda has participated in the long-distance embroidered products trade after her daughter was two years old. Linda and her friends usually stayed six or eight months per year in Beijing, and they went back home during the winter time. They only rented one room and shared bed; seven yuan[1] per night for each person.

> "We did not own a formal store, then we only put our products on the street. When people walked by, they usually stopped and asked about our products. They loved to buy some items because they have not seen ethnic embroidery before. Most of our customers are foreigners, they have money and they love exotic embroidered products. But we did not have good luck always. Sometimes we were expelled by (*beinian*) the local police, they did

[1] Yuan: the standard unit of money in China. 1 US dollar = 8.619 yuan (the annual average price) in 1994.

> not allow us sell products on the street. Those experiences were frightened. After so many years have passed, occasionally, I even dreamt about I am being chased. My journey was harsh."

Linda took the long-distance embroidered products trade for five years. Linda's parents-in-law helped her to take care of her daughter every time while she was staying in other cities. I surprisingly asked Linda why she continued this long-distance trade if she was scared of being expelled by the police, then she replied:

> "I did not have other choices. I could survive with any bad living conditions, but my daughter could not. I had a daughter to raise. I had to thinking about her all the time and make a living for her. My husband did not make any contributions to this family. He did not give me one penny to raise my daughter, and thus I had to find a way by myself."

Few years later, Linda found out that her husband had a mistress during he was working outside. Linda's parents-in-law blamed him many times after they knew about his affair, but he did not change his behavior. Linda's husband stole a sum of money from his company in order to feed his mistress (*yangqingren*). The company eventually found out and dismissed Linda's husband from the company. Linda was being softhearted and helped her husband to repay 87,000 yuan[2] back to the company in 1998, and thus her husband retained his job. Linda used up all the money that she earned from her embroidered products trade.

Linda tolerated her husband's irresponsible behavior for the sake of children. She afraid that it would have bad impacts on her daughter if they had a divorce. But unfortunately, Linda's husband has not learned a lesson and did not appreciate what Linda has done for him. A few years later, he eloped with his mistress. Linda's husband put her in an extremely cruel situation. Linda had no choice, and she applied for divorce by court. By the time her daughter was only in the second grade of elementary school. Linda moved out from her parents-in-law's house and took her daughter settled down in the county after divorce.

With her daughter was growing up, Linda concerned about her daughter's education and family daily expenditure. She was unable to take long-distance trade any longer because she had to take care of her daughter by her own. Linda wanted to run a store, but she did not have enough budget to do so. She also tried to find other jobs, but her education background was a problem that she could not find any well-paid and stable job. Meanwhile, working outside was unrealistic for her since she had to accompany her daughter at home most of time. Luckily, Linda was occupied by a woman embroiderer (*xiunv*) who ran an embroidery store, and thus she could do what she is good at and also able to take care of her daughter. After Linda saved enough money, she opened a Sani Yi hats (*baotou*) store in the market.

Linda's narration illustrates that being a divorced-single mother, she once was economically and socially marginalized, but her hard-working and courage have changed her life. Linda has been the sole economic supporter of her family and supported her daughter's education on the one hand, on the other hand, importantly, Linda do not feel ashamed to be a divorced-single mother anymore. Linda fully accepted her identity and is able to live in a better life. The following case study provides another story.

Case # 2: Wendy

Wendy was born in 1969, she lives in the village where is 2 kilometers far away from the embroidery handicraft market. Wendy was fully inspired by the new opportunities, she took embroidery trade since the late 1980s. Despite the transportation service was underdeveloped during that time, Wendy had a geographical advantage because it only took around 10 minutes each time for her to walk from the village to the market. Wendy mainly sold Sani Yi embroidered bags; it charged around 15-25 yuan per

[2] In 1998, 1 US dollar = 8.279.

bag, and then she could earn 3,000 yuan within a year. For many years, Wendy's economic gain from embroidered products trade has played an essential part of her household economy.

By 1999, in order to protect and develop tourist areas, the embroidery handicraft market was abolished. Wendy and other Sani Yi women embroidery traders were unable to sell embroidered products in the handicraft market any longer. Fortunately, Wendy's embroidery skills were acknowledged by her relatives, neighbors, and friends, her customers are increasingly accumulated. Wendy got many orders day by day from her stable customers, and she started to sell products at home.

Around 10 years ago, Wendy sold her cultivated land to the government in order to support tourist areas development. As compensation, Wendy's family could get 10,000 yuan per year in the previous years, but recently, they only could get 2,000 yuan per year. Once they lost their lands, Wendy's family could not earn income from agricultural outputs anymore. Each family member has to look for other jobs outside the village. Wendy's husband works at the scenic spot as gardener, and their two children work in the county in different fields.

> "My husband works as a gardener. He can earn fifty yuan each day; works 28 days per month, and thus his income totally is around 16,800 yuan per year. I could earn around 40,000-50,000 yuan from embroidery trade. If I did not take embroidery trade, how could we rebuild our house and pursue a better life? I am so glad that I am able to make a living for my family through my embroidery skills."

Obviously, Wendy is not the sole economic supporter of the family, but her economic undertaking made a huge contribution to her familial stability and improved her family living conditions. It is worth to notice that Wendy's economic performance is mostly pressured by her family financial demands. Accordingly, as Wendy's orders for embroidered goods increased progressively, she had to spend more and more time and effort on embroidered products producing. In order to support Wendy's trade, her husband took on all responsibilities for domestic works.

While I was trying to analyze the gender roles in Wendy's family, I realized that I had to dismantle the stereotypical ideas about gender roles as fixed and immutable. Learn from Wendy's case, despite Wendy's economic pursuits are determined by the primary concern for her familial stability, her economic self-reliance and huge contributions for her family empowered herself in a certain extent. The changes in gender roles in Wendy's family has thus possibly resulted in a new configuration of gender relations. Given these circumstances, the gender relations between Wendy and her husband provides an extremely important example to argue that gender roles are not fixed and immutable, but dynamic and ambiguous. The following narrator, Bella, a successful entrepreneur provides another example.

Case # 3: Bella: Bella was born in 1965, and she was only graduated from junior high school. Her husband, seven years older than her, had been a wrestling coach who taught at Kunming Physical Science College; he is now retired. Bella and her husband were married in 1990. Since Bella's husband had to work every weekday, she moved to Kunming in 1998 in order to take care of her children and husband.

Bella was a housewife and stayed at home to take on endless domestic works. Bella did not have any income back then, and thus she had to ask for money from her husband every month for the family's daily expense. Bella was extremely timid when she asked for money from her husband each month, but unfortunately, she was violence abused by her husband occasionally. Bella's husband's salary was 7,000-8,000 yuan monthly during that time, but he only gave Bella 400 yuan for family expenses. He would rather invite his friends play mahjong[3] almost every night in their home. Sometimes Bella's husband would lose quite a lot in one night, then he would violence abuse Bella in order to let off steam. Or

[3] Mahjong refers to a game that was developed in China. It is commonly played by four players.

sometimes Bella was violence abused after her husband drunk. Bella have tolerated domestic violence for six years since she lacked social network in Kunming. She was too scared and felt too ashamed to share her abusive episodes with others.
By 2004, Bella used her younger son's preschool education and agricultural work as excuse, and she decided to move back to the village. Since Bella lived separately with her husband, she seems had more freedom to do her own business. Bella cooperated with her close friends, who live in the same village, to design and sell Sani Yi embroidered clothes on the market. A few years later, Bella saved enough budget and joined Wei's Corp to do broiler chicken raising (*roujiyangzhi*). After learning the new technology—the e-commerce platform, Bella and her friends established their own brand and sell their products online.

Curious about Bella's motivation of economic participation and identity transformation from a timid housewife to an active entrepreneur, I attempt to understand how Bella takes risks and how Bella's husband reacts on her economic undertakings.

"My husband did not support me. He only wants me to be a housewife and obey him for my whole life. But after I moved back to the village, I had to make a living for my son. I could not offer a better life to my children if I only depended on the limited money that my husband gave to me every month. I eventually got chance to live my life while we were living separately. Luckily, I could start my business with my friends, they always being supportive. When I faced some problems, or I needed to borrow money, I asked my friends' help. I would never tell my husband about my decisions and problems, otherwise there would be an inevitable war between us. My friends would always help me, but my husband would only blame me."

Meanwhile, focus on Bella's life trajectories and her active economic undertaking, we may ask: what are the cognitive changes underlying Bella's life experiences? To what extent does her economic participation help her to break through the conventional restrictions and gender hierarchies that are imposed upon her? What changes can be seen reflected in gender relations between Bella and her husband?

"When I had to rely on my husband for almost everything, I had no choice and I had to fully obey him, even sometimes he resorted to violence, but I could not do anything. I always cried by myself and tolerated everything he has done to me. But Since I am economically independent, I am no longer asking for one penny from him. I dare to speak up if there is anything on my mind, and I am able to decide what I want to do. At times, when he would beat me, I would fight back. Although I could not defeat him because he was a wrestling coach, I am still able to fight back. Later, he did not resort to violence against me anymore. I think that it is because my nerve and my strength."

To address domestic violence against women is one of major goals of women's empowerment (Gupta & Yesudian, 2006; Kasturirangan, 2008; Goodman & Epstein, 2008). Then how do we interpret Bella's experience of violence? In a paper tacking the issue of women's empowerment, Gupta and Yesudian (2006) propose a way to analysis women's experience of violence, it closely relates to their spousal age and educational differentials. They claim that women who are married to men much older than themselves or whose husband are much more educated than themselves are likely to have experienced violence or live with the threat of violence than those women who are closer in age and have similar education background with their husbands. Since a large age and education gap can put women at a relatively disadvantage position in the marriage. As such, in Bella's case, she and her husband have relatively large age and education gap indeed. Nevertheless, we cannot ignore the primary reason of Bella's experience of violence stems from her lack of self-reliance both in materially and mentally. Moreover, Bella's shameful feelings from the constraints of cultural norms have result in her tolerant attitude towards domestic violence. Thus, economic self-reliance plays a key role in achieve the goal of ending domestic violence and taking control of one's life. In other words, as women's economic self-

reliance and spatial movement autonomy increase, they will less tolerate domestic violence, and they have more courage to challenge gender discrimination and implement structural changes.

How do we understand the changes in Bella's life? Obviously, despite Bella's economic pursuits are undertaken for the purpose of maintaining and securing a future for her children, not for self-fulfillment, Bella gained economic independence by seizing economic opportunities, which deeply empowered her. Bella's empowerment is not only expressed in her strength to fight back when her husband is forceful with her, but also in her ability to make strategic life choices in order to pursue a better life, which indeed challenged patriarchal norms and conventional constraints that society assigned to women.

Conclusion: Inspired by the new economic opportunities and encouraged by the state, an increasing number of women presently entering the market to participate in economic activity, in terms of embroidery trade. But the research shows that in many cases, Sani Yi women are compelled to do so because their husbands are unable to provide enough economic support for their families. The research demonstrates that Sani Yi women embroidery traders' economic participation was not initiated by their personal desire to gain individual autonomy or to challenge existed gender norms, but by their primary concern of familiar stability and family members' well-being, especially their children's well-being.

Meanwhile, we have to notice the fact that Sani Yi women embroidery traders' economic participation, indeed, entails change in their lives and in the relations with men. They are able to improve their economic status without relying upon their husband's contributions, and thus they are in a better position of gender relations and have capacity to make strategic and meaningful life choices. Specifically, a series of changes can be seen reflected in Sani Yi women embroidery traders' lives, such as obtained economic self-reliance, improved women's sense of self-awareness, transformed the household gendered division of labor, acquired decision-making power and authority, broke the conventional limitations on women's space, changed women's attitude towards domestic violence, and gained social status. Therefore, as the previous case studies have illustrated, this paper leads to the conclusion that despite Sani Yi women embroidery traders' motivations of economic participation are out of their sacrificial motherhood, their economic performance empowered them in different extent.

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THE POLITICS OF ABDUCTION IN AMRITA PRITAM'S PINJAR AND RUSKIN BOND'S A FLIGHT OF PIGEONS

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Abstract: The chaos of Partition with its climate of political turmoil and disorder has proved fertile ground for authors setting works, with themes of abduction and rape, within it. Bapsi Sidhwa's *The Ice-Candy Man* and Khushwant Singh's *Train to Pakistan* come most forcibly to mind. These books, which depict the cruelty and barbarism of human beings, draw much of their force by focusing on the destructive effects of mass passions. Even Keki N. Daruwalla's splendid *Love across the Salt Desert* draws much of its force from the fact that the elopement happens across a political border in times of social unrest. *A Flight of Pigeons* is another such book set during the mob violence of the Sepoy Mutiny. Such themes have been popular with writers simply because they allow them to put forth the human condition in all its naked truth. This paper seeks to examine the violence perpetrated on women and the treatment of their bodies as sites of contest through a critical study of two novellas dealing with abduction set during times of mob violence - Amrita Pritam's *Pinjar* (The Skeleton) and Ruskin Bond's *A Flight of Pigeons*. The similarity of form (both are actually somewhat long short stories) and the similarity of content (abduction during mass unrest) belie the difference in the treatment of the subject-matter by both these literary luminaries. The aim of the paper is thus threefold. First, to critique the novellas in terms of their similarity and assert how they deal with the body as a site of encroachment. The second, is to compare their difference in treatment and to analyze how Bond and Pritam approach the content through drastically different perspectives, and lastly to reflect on the role of gender politics to which this difference in treatment is ascribed.

Keywords: Body, Gender Politics, Partition, Race Relations.

Introduction: The Partition of the Subcontinent is one of the most traumatic episodes of the twentieth century. There was a mass displacement of people due to which many lives were lost, and the blood-thirsty massacres have been depicted many times since in films and books set in that period. Urvashi Butalia claims of the mass mobilization during the Partition that:

> The mass movement of people as a consequence of the British decision to the partition the country has been called the largest human migration known to history. It took place on the western border of India over roughly a three-month period off, with small groups of people or individuals crossing over time to time. The number who crossed over on both sides was counted in several millions. (Butalia 97)

In this atmosphere of chaos and unrest, crimes of great gravity were committed; countless people were butchered, women raped, homes set on fire and mob violence proliferated. Butalia claims that, as is common in war-zones, it was the women who were the most affected:

> Twelve million people were displaced as a result of partition. Nearly one million dead, Some 75,000 women were raped, kidnapped, abducted, forcibly impregnated by men of 'other' religion, thousands of families were split apart, homes burnt down and destroyed, villages abandoned. (Butalia 45)

Statistics, of course, cannot document the pain of suffering on an individual level. That exploration is best left to literature and film. Popular films such as *Gadar: Ek Prem Katha* (2001) and *Hey Ram* (2000)which are set during the time of Partition, and art-house products like *Khamosh Pani* (2003) all bewail not only the misdeed of those times, but the effects on the individual psyche. The Sepoy Mutiny was similarly marked by looting, plunder and violence on a large scale. Books such as *The Siege of Krishnapur* (1973) and popular films such as *Mangal Pandey* (2005) and art-house products such as *Junoon* (1978) portray such times.

What I noticed though, in my study of the Literature set in such times, was the differing perspectives bought to the table by men and women. Some writers such as Manto were very perceptive about and sensitive towards the sufferings of women but others indulged in only a cursory examination of the plight of their women characters.

This paper seeks to engage in a comparative analysis of two texts *Pinjar* and *A Flight of Pigeons*; their writing style, thematic concerns and the effect of gender politics on them.

A Comparative Analysis: *Pinjar* and *A Flight of Pigeons:* *Pinjar* is noted for its lyrical style and its concern with the lot of women, their travails and sufferings whereas Bond's story is written in dry, descriptive prose (lacking his usual enchanting magic of those stories set in Dehradun) and is concerned withrecording a tale of the abuses suffered by the British during the mutiny.

The plot of *Pinjar* is very simple. Just like Hades abducts Persephone when she is picking flowers in a field and carries her off to his Kingdom underground in his chariot, Rashida comes galloping on a horse and carries off Pooro when she is plucking radish beans in a field. His motive is passionate love, and saving her from dishonour at the hands of his relatives, all of whom want to abduct her to settle an ancient feud between the *sahukar's*family and the *Shaikh* family.

Javed Khan, who abducts Ruth from Lala Ramjimal's house, where she has taken shelter during the revolt, has the same motive. Love, saving her from his countrymen who want to kill her, and the fact that the girl, ever since he had seen her, had been on his mind for months (Bond 51).

But the difference lies in the treatment. Bond's focus is not on the plight of the girl but in presenting a romanticized, grandiose figure of Javed Khan, a man, who according to Bond is redeemed by the virtue of the fact that he falls in love. While Pooro acknowledges Rashida's faults, Ruth sees a glossy version of Javed Khan:

> He was very wild and muddle-headed, and often cruel, but he was also very handsome and gallant, and there was in him a streak of nobility which he did his best to conceal (Bond 133).

The use of the word 'muddle-headed' which is a childish word, seems to be a recognition on the part of the author that the assessment is faulty but is to be excused on the account of childishness as Ruth is a young girl. This authorial awareness of the lopsided version presented throughout the book, at the end of the book, does nothing to diminish the male gaze constructed narrative we have been presented with throughout the book.

If one of the hallmarks of the male gaze narrative is lack of exploration of the interior lives of women, and concern with them only as much as they influence feelings of love, tenderness and sacrifice in the male protagonist[1] – then this novella fits the requirements to the hilt.

Also present is an intersection of race and gender politics in the novella. Bond shies away from portraying the taboo topic of miscegenation. Ruth remains chaste, pure and uncorrupted in Bond's vision – and the closest the two protagonists come to physical consummation is when Javed Khan visits Ruth at night and stares at her from a distance:

> I opened my eyes once, and saw Javed Khan standing in the doorway, the moonlight shining on his face. He stood there a long while, staring at me, and I was too afraid to move or call out. Then he turned and walked quietly away; and shivering with fright, I put my arms around mother, and lay clinging to her for the remainder of the night (Bond 71).

[1] See Laura Mulvey's 1975 essay, ''Visual Pleasure and Narrative Cinema.''

It is Khan's restraint in this scene which is applauded; the girl is presented as merely the 'shivering, clinging' object of the gaze.

In Amrita Pritam's book, the focus is on Pooro, and her travails in Rashida's house. Her reception by her parents when she manages, once, to escape from Rashida's house:

> 'Who will marry you now? You have lost your religion and your birthright. If we dare to help you, we will be wiped out without a trace of blood left behind to tell of our fate' (Pritam 22)

Her parents are more concerned with their own safety in the Muslim-majority village rather than the well-being of their daughter who they assume has been defiled by a Muslim and now belongs with him. This heart-breaking coda of society is the focus of Pritam's gaze.

As are the sufferings of the other women whom Pooro encounters on her life journey: Kammo, with her dead mother and a cruel aunt who blames her for everything and grudges even the clothes on the niece's back, Taro who has epileptic fits and whose husband keeps a mistress and has no use for his wife, the mad woman of Sakkar who gets impregnated and whose son Pooro adopts:

> 'What sort of a man could have done this to her?' the women of Sakkar asked each other. They clenched their teeth in anger….'he must be a savage beast to put a mad woman in this condition (Pritam 53).

And lastly, Lajo, her brother's wife who is abducted during the Parition by a Muslim man.Pooro rescues her and helps her in returning home, thus showing compassion to others in her situation, even though no one had showed any to her.

The feminine susceptibility and suffering are all explored by Pritam in depth. Bond's novel, in contrast, only skims the surface, and instead of extending itself into a social exploration, is more of a personal take on a wild, heroic figure whose greatest achievement paradoxically, is that despite intense passionate desire for a girl, he displays restraint out of social decorum. The focus is glorification and the tale is one of restraint displayed by an abductor.

It is not for me to say that this approach is misguided, only that there is a difference of treatment.

Conclusion: Depicting the hooliganism of 'the Other' rather than empathizing with their sufferings, especially if they happen to be the subject race, makes Bond's novel a perpetuation of prejudice. Whereas Amrita Pritam's work is about the pernicious effects of such prejudice itself. I ascribe this difference of treatment to Gender and Race politics which Bond is afraid to confront or examine. This is most evident in the closing scenes of both the novels. While Pooro's decision to remain with Rashida is an act of authorship and independence (she prefers to stay with him rather than grasp the chance to return to her parents who had given her up for dead), Ruth's defiant action of letting Javed Khan gaze upon her one last time, satisfies nothing but a male fantasy. Though it has to be reckoned that it is the only possible ending in a cautious novella written to cater to the male gaze:

> 'I know that the time has passed when I could speak of marrying your daughter,' he said. 'It is too late now to do anything about that. But will you permit me to see her once more, before I leave?'

'What good will that do?' began mother; but impelled by some odd impulse, I stepped forward into the light and stood before Javed Khan. He gazed at me in silence for about a minute, and for the first time I did not take my eyes away from his; then, without a smile or a word, he turned away and mounted his horse and rode away into the night (Bond 124).

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EFFECT OF INTERNET ADDICTION AND SOCIAL ANXIETY ON PSYCHOLOGICAL WELL BEING OF THE ADOLESCENTS

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Abstract: Adolescents are currently the defining users of the internet. Internet provides us with tremendous benefits and for the students it has become a medium for communication and gathering information. Adolescents are newly introduced in the world of internet and for them internet opens the gate to the different world, where they feel everything in their hands and it affects them in many ways where excessive use leading to social anxiety and affecting psychological well being. For the present study following scales were used Internet Addiction Test (Dr. Kimberly Young, 1998); Liebowitz Social Anxiety Scale (M. Liebowitz, 1987) and Ryff Psychological Well Being Scale (Ryff, 1998). Statistical Analysis- *t* test and pearson correlation and proper statistical analysis were applied.

Keywords: Internet Addiction, Social Anxiety, Psychological Well Being and Adolescents.

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A COMBINED NEURAL NETWORK-SEM APPROACH IN VALIDATING THE MEDIATING ROLE OF ORGANIZATIONAL LEARNING

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Abstract: A combined neural network and structural equation modeling (SEM) approach is shown of its usefulness to empirically test the hypotheses. A hotel industry in Aceh, Indonesia, is studied, involving 151 valid responses by the hotel managers and other positions. The model tested and confirmed the mediator role of organizational learning – That is, although "what gets measured gets managed" is important to improve and drive up the performance level of operations management, the role of performance measurement is better leveraged when organizations engage in learning. Network of suppliers play the similar role as performance measurement, which, thus, can be conceptualized as an extended performance measurement to provide the insights and new perspectives for supporting strategic and operations management. Besides, this research also supports the logics of Balanced Scorecard, but incorporates a larger domain of performances beyond financial objective.

Keywords: Organizational learning, hotel, performance measurement, SEM, neural network, Balanced Scorecard.

Introduction: Efforts of organizational learning, performance measurement (Tan and Anomasiri, 2017) and relationship networks (Pibeaum, Alvarez and Wilson, 2012) are recommended especially organizations need to deal with the rapid changes of the environment in the industry and markets. According to Revans (982), when environmental change is faster than organizational speed in learning, the organization will falter essentially. Learning has been empirically shown to be useful mechanism in acclimatizing new behaviors (Mwita, 2000). By focusing on learning and how it impacts organizationally, such as services and customer-facing performance, a motivational, directive and reinforcing property of organizational learning is exploited to the benefit of the organization (Baker and Buckley, 1996). Nevertheless, due to some obvious lack of research studying the antecedent roles of performance measurement and relationship networks, in improving the efficiency of service operations, this research thus serves a part of the ultimate purpose to contribute to the literature. The gap exists albeit the fact that some fundamental bases of insights can be located. For instance, judging from the learning and experience process discussed in Mumford (1994), it can be inferred that performance measurement could be better utilized when it can be used to foster a cognition and codification process that involves retrospection, prospection, and incidental and intuitive engagements. The later four processes are characteristics of organizational learning advocated in Mumford (1994). Towards this end, this research stresses on a mediating role of organizational learning in attempting to leverage what performance measurement and network relationships can offer to impact on behavioral efforts of the hotel organizations, such as operations management.

In the hotel context, different aspects of performance-enablers have been identified and studied such as improving organizational competitiveness (Fraj, Matute, and Melero, 2015), enabling service innovations (Tajeddini, Altinay and Ratten, 2017; Tan and Anomasiri, 2017), and creating competitive advantage (Liu, 2017). However, mediating role of organizational learning that aims to further leverage the roles of performance measurement and relationship networks in supporting organizational performances still has the gaps in the extant literature. While there are research publications focusing on performance measurement as a key strategic theme (Herrington, McPhail, and Guilding, 2013) or at efficiency level (Yang, Xia and Cheng, 2017), its antecedent role in support of organizational learning is not empirically clear in the social environment, though the engineering field is mature of it, such as by referring to process learning through parameter identification or measurements (Sung, Lee, & Lee, 2009). In addition, although relationship networks play significant role (Jesus and Franco, 2016) in hotel's success, its supporting role on organizational learning and operations managements is rarely addressed.

In view of the above background, the following research objective is raised:

The purpose of this study is to deduce a data-and-relationship network-enabled and learning-supported base from the literature and provide the empirical supports to demonstrate its ability to explain the variances of operations managements, and further enables positive contribution to delivering customer outcomes and meeting hotel objective.

Literature Review: There are many theoretical and practical reasons why a research theme focusing on organizational learning and performance measurement is needed. Rational logics of this focus would be as diversified as the creativity possibility of human beings. For instance, organizational learning and performance measurement can be sources of knowledge. According to knowledge-based view (KBV) of firms, knowledge is the most important strategic resource of a firm in competition (Fang and Lu, 2016). Fundamentally, performance measurement provides data and information to facilitate organizational learning (Srimai, Damsaman and Bangchokdee, 2011). When one examines further, the role of performance measurement is wide-ranging. Performance measurement, when aligned with other strategic and operational initiatives of organizations, such as organizational learning, Tan and Arsirapongpisit (2002) advocate that it can create a lived space of high-energy and corporate uplifting, which sees the active and sensational interactions among the employees and key players. The following efforts, as presented in the 10 hypotheses deductively raised, would be aimed at delineating the interrelationships of performance measurement, organizational learning, and network of relationships as the base to help organizations improve operational and customer-facing performances.

Role of Organizational Learning: As explained and illustrated in Argyris (2005), organizational learning has a fundamental role in eliminating the errors (i.e. performance below the expectation), which can be executed by means of single-loop as simple adjustments of actions or double-loop learning by making efforts in changing the underlying assumptions and values that govern the actions in the strategy. Through learning of "Model I theory-in-use," organizations can learn what is preventing them to move forward to realize operational objectives and strategic plan, and furthermore, can help them establish new assumptions and develop improved initiatives. As such, a hypothesis, which establishes the link to operations managements, is assumed:
H1: Organizational learning effort positively influences operations managements.

In short, the role of organizational learning in fostering continuous improvement is made possible through the continuous adjustment at the action-level (single-loop learning) and assumption-level (double-loop learning; see also Tan, 2007a, b).

Role of Performance Measurement in Organizational Learning: Based on the theoretical root of single- and double-loop learning of Argyris (2005), performance measurement serves as the base to enable organizations to critically question the current assumptions of Model I or theory-in-use, and thus enacts to equip organizational members with the mindfulness context for initiating a process of cognitive construction or re-construction of strategies to meet goals (Tan, 2007a, b). By explicitly monitoring and measuring the efforts made by organizational members, it prompts organization to close the performance gap (Argyris, 2005) and reduces the negative impact of the unproductive group-think (Larsen, 2001). Thus, the following hypothesis is raised:
H2: Both employee and organizational performance measurement efforts provide a base to influence organizational learning.

Furthermore, based on information feedback theory (Bilodeau, 1966; Baker and Buckley, 1996), performance measurement has also the directive (i.e. informational), motivational (i.e. incentive), and reinforcing properties. These properties provide the necessary socio-psychological and strategic management mechanisms to guide the resources utilization and investment of intellectual capitals in order to influence hotel operations efficiency improvement. This perspective leads to the following hypothesis:
H3: Both employee and organizational performance measurement efforts can positively influence operations managements.

Mediating Role Organizational Learning: Through learning, what gets measured gets organized into an orderly manner and thus generates a higher-order capacity to better and able to improve organizational processes such as operational efficiency. Inferring from Kolb's (1984) experiential learning concept, organizational learning makes use of the measured to improve the understanding of an experience and thus the performance level of an experience. With measurement, it makes it possible for organizations to engage in an emancipatory process of delusion or gap elimination (Tan and Arsirapongpisit, 2002). The tight relationship between learning and behavior is also manifested in the positive behavioral reinforcement (London and Smither, 2001). In view of the logic above, the following hypothesis is assumed.

H4: Organizational learning is an effective mediator in between performance measurement and operations management.

Note that the conditions for mediator, M, to play significantly role in between X and Y, shown figuratively in Figure 1, are stated as follows:

- X must significantly predict Y in isolation.
- If X is going to "act through" M to influence Y, then X must significantly predict M in the mediation model.
- If X is going to "act through" M to influence Y, then M must significantly predict Y in the mediation model.

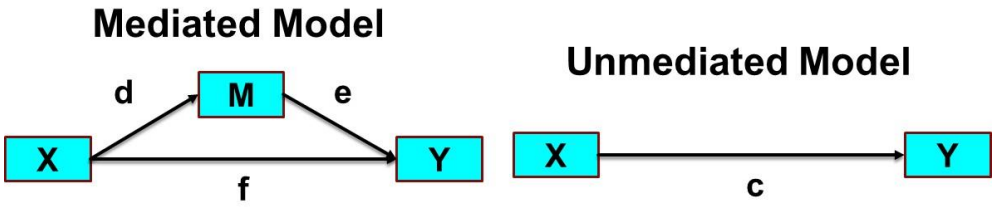


Figure 1: The Mediating Role of M in Between X and Y

Given the structure in Figure 1, there are three possibilities of mediation – namely, (1) perfect mediation of M which has erases the significant and direct predictive power of X in explaining the variance of Y, (2) partial mediation of M which shows a reducing significant ability of X to predict Y as compared to the original unmediated state, and (3) absence of mediation of M when the regression coefficient of X to Y will be the same with M in the model as regression coefficient c.

Role of Network of Relationships: Network of relationships is a key resource-improving business practices (Jongwanapitakkul and Tan, 2018; Tankam and Tan, 2018). Relationship channels or networks are conceptualized in this research as means of transferring and exchanging knowledge between organizations (Beeby and Booth, 2000), and when organizations make use of them, it can enhance their innovativeness and competitiveness (Husain, Dayan and Di Benedetto, 2016). Having possessed of a role as means of transferring and exchanging knowledge (Beeby and Booth, 2000), network of relationships can share similar role to performance measurement (Tan, 2007a,b) and can thus can infer to assist organizational learning. In short, through relationship networks associated with "sets of purposeful and connected exchange relationships" (Pibeam, Alvarez and Wilson, 2012, p. 358), it opens up dialogue and enriches the perspectives and efforts in performance measurements; thus, also contributing to organizational learning and operations managements (Andersen and Christensen, 2005). In view of the aforementioned understanding, the following three hypotheses are further raised:

H5: Network of relationships can significantly explain the variance of organizational learning.

H6: Network of relationships can significantly explain the variance of operations management.

H7: Network of relationships is positively related to both the employee and organizational performance measurements.

Customer Outcome and Hotel Organizational Objective: Customer outcome is indicative of the success of the hotel operations that is able to meet the needs of the hotel customers, while fostering a positive image and customer satisfaction. Kaplan and Norton (1992) introduced Balanced Scorecard (BSC) so that executives can be provided with a practical and comprehensive framework that "translates a company's vision and strategy into a coherent set of performance measures" (p. 24). The previous sets of hypotheses (H1 to H7) have established the bases and initiatives that should, as according to the BSC concept, enabled the hotel establishments to improve and deliver the expected customer outcomes and hotel objective. Customer outcome connotes the quality services delivered as expected, and thus, receiving the customer satisfaction and favorable hotel image. Hotel image is often considered as the most influential element in services (Lahap et al. 2016), because of the natural uniqueness of services like perishability, inseparability, tangibility and heterogeneity (Dhilon, 2013). With intangibility and other complexity of factors as the core features and components of businesses, the overall image formed becomes uniquely important. Image reflects the memorable experience of customers (Keller, 1993) and a potential value-creating force in brand-equity management (Suhartanto and Kandampully, 2003) that characterizes a part of brand equity. For instance, the commonly used strategies for hotel managers to foster the development of hotel images and meet marketing objectives are namely "low-cost leadership through price discounting" and "developing customer loyalty by providing unique benefits to customers" (Kandampully and Suhartanto, 2000). In strategic and operations management context, hotels should not only pick a suitable strategic choice, but most importantly, the hotels should establish a capability to guarantee efficient service management (Peng, Zhao and Mattila, 2015), which is made possible by employees engaging in continuous learning to improve operations and service quality (Tan, 2007a, 2007b). As such, the following three hypotheses are assumed:
H8: Organizational learning can significantly explain the variance of Customer Outcomes.
H9: Operations managements can significantly explain the variance of Customer Outcomes.
H10: Customer outcomes, operations management and organizational learning, collectively, explain the variance of Hotel Objective.

H10 is a more holistic version of the BSC concept which replaces the financial perspective with hotel objective.

Method: A two-stage data analysis approach is adopted for this study. First, feedforward back-propagation multilayer perceptron (MLP) method is used to determine significant hypothesized predictors explaining the variances of two important dependent constructs – namely organizational learning and hotel objective. The neural network results help identify normalized important constructs, which are then used, in a second stage, in the structural equation model and in accordance with the predicted architectures suggested by the neural network simulation, to assess the model fits. Both incremental and absolute fits are examined in SEM, where SEM is "a family of statistical models that seek to explain the relationships among multiple variables… to estimate a series of separate, but interdependent, multiple regression equations simultaneously by specifying the structural model used by the statistical program" (Hair et al. 2006: 711).

Samples: The data were collected from twenty-two hotels operated in Aceh province of Indonesia, which includes hotel names like Djawal hotel, Jeumpa hotel, Serambi Mekah, Aceh Barat, Grand Arabia, Grand Aceh Syariah, Hotel Kartika, Hotel 88, Hotel Mekkah, Hotel Kuala Radja, Hotel Lading, Sultan Hotel, Oasis Atjeh Hotel, Hotel Medan, Hotel Diana, Hotel Uin Arraniry, Meurah Mulia, Kyriad Muraya Aceh Hotel, Al-Hanafi Hotel, The Pade and Hermes Palace Hotel. The descriptive profiles of the respondents would be given in the Data Analysis section. The following describes the instrumentation background of the constructs.

The following states the definitions of the studied constructs.

Customer Outcomes: Customer outcome is indicative of the success of the hotel operations that is able to meet the needs of the hotel customers, represented by service quality, while fostering a positive image and customer satisfaction.

Hotel Objective: Rather than focusing on only the financial perspective, this research takes a more holistic extension of the BSC concept of Kaplan and Norton (1992), which is summative in nature, i.e. employee-aspect, customer-domain, financial perspective, and productivity expectation of the hotel.

Operations Management: Operations management examines the ability and efforts on delivering the service standard requirement and the strategic objective of the hotel. Measurements include:

- Different departments, i.e. food, beverage, food, room service, front counters, in our hotel are working closely together.
- Our hotel uses modern communication technology and applications, i.e. LINE to communicate among each other in our team.
- Each of us can handle our job responsibilities to the standard demanded.
- Our hotel has best practices and standards to deliver quality of services in different job departments, e.g. check in.
- Our hotel continues to ensure efficiency of operations e.g. booking, room service.
- Our hotel continues to improve operational procedures to quickly respond to customer demands.
- Our hotel maintains a network of relationship with sales agents.
- Our hotel maintains a network of relationship with key suppliers of raw materials.
- Our hotel maintains a network of relationship with key engineering supporting companies from the outside.
- Our hotel maintains a network of relationship with other hotels in the same ranks.
- Our hotel maintains a network of relationship with hotel association in our region.
- We regularly develop new service ideas to increase customer expenses with us.
- Our hotel regularly participates in social responsibilities.
- Our Human Resource always focus to improve the working environment, quality of life and employee satisfaction.
- We continue to refurbish our infrastructure for the benefits of our customers and our hotel image.
- We share with other hotels on best practices such as computer programs for booking, check-in etc.

Organizational Learning: This study operationalizes the organizational learning construct according to the single-loop and double-loop learning concept of Argyris and Schon (1978), based on a definition that states the existence of organizational learning "when members of the organization act as a learning agent for the organization, responding to changes in the internal and external environment of the organization by detecting and correcting errors in organizational theory-in-use" (p. 23). In this definitional context, the instrumentation used are five-item statements: 1) Most of our hotel employees would raise issues and problems while at the same time suggest ways to solve them, 2) When faced with performance deficiency, i.e. lost sales, customer complaints, quality issues in food menu, our hotel will attempt to close the gaps, 3) If mistakes arise, our hotel would review the procedures and find out how we can prevent the mistakes from happening again, 4) Our hotel regularly reviews and revises the policy to improve overall hotel performances, and 5) Our hotel cares about employee's learning and improvement on attitude, knowledge and skills to better conduct the job role, i.e. serving customers, doing a maintenance and gardening. Item 4, in particular, involves with changes of views and assumptions, signifying some degree of double-loop learning in action.

Performance Measurement: Although there are many direct and obvious reasons for performance measurement such as to assess the performance of various processes (Ahmad, Svalestuen, Andersen and Torp, 2016), this research reinforces its stimulating effect on how organizational employees engage in learning and enhance operations improvement. Nine measurement items are employed for measuring the efforts exerted on performance measurement: 1) In our hotel, we measure employee performances in

their job roles, 2) In our hotel, we measure employee performances in their attitudes to deliver the best services to their colleagues as well as the, 3) In our hotel, we measure employee performance in their ability to deliver quality services to our guest, 4) In our hotel, we measure customer feedback in various ways i.e. survey forms, interviews, complaints, customer satisfaction, 5) In our hotel, we measure our ability to control costs i.e. food and beverages, room services, 6) In our hotel, we measure and monitor the performance level of every type of operations i.e. room service, front office, back offices and marketing and sales, 7) In our hotel, we measure continuous improvement initiatives, 8) In our hotel we monitor the perceptions of our guests in our services, and 9) In our hotel we monitor the image our guests form of our hotel. These nine items are factorized into two clusters, namely employee-focused performance measurement (EPM) and organization-focused performance measurement (OPM).

Network of Relationships: Network of relationships with the outside stakeholders has been observed by many researchers to contribute towards information advantages (Galaskiewicz, 1996). A three-item measurement instrument is designed for this study, namely: 1) Our hotel maintains a network of relationship with key suppliers of raw materials, 2) Our hotel maintains a network of relationship with key engineering supporting companies, and 3) Our hotel maintains a network of relationship with other hotels in the same ranks.

Result and Discussion:

Descriptive Profiles and Cross-Comparative Analyses: Data were collected from 151 employees of the hotels located in Aceh province of India. Table 1 summarizes the data profiles of the respondents, which see majority of the hotels surveyed are 3-star or below, occupying 91.4 per cents. Majority of the hotel demographics include family-owned, at 74.2%, with the respondents holding university degree at 64.2%, and positions at supervisory level and below at 84.7%. Obviously, there is a lack of representatives at the managerial levels, but, nevertheless, in the emerging cyber-landscaping environment, where organizations continue to flatten and workforces become important driving forces of the organizational success (Brown, 2003), the pictures revealed in the subsequent structural equation modeling (SEM) result should be representatives of the perceptions of the workforces. These workforces are characteristics of the effectiveness of the followership and the management structures, as also highlighted in Asghar (2016) that "good, skilled followers are able to nurture good leadership, by invisibly helping novice leader upright and on track". The equal distribution attributes are shown in the form of hotel operations structure, as either chain or non-chain, at respectively 41.1% and 58.9%, and also the gender, and duty distribution equally spreading between the front offices and the back offices.

The color-coded cells of Table 1 highlight the areas of significant differences, revealed by means of either the analysis of variance (ANOVA) or t-tests, highlighting the slightly higher levels of perceptions of the structural elements of the models. The joint-venture is a value and risk co-sharing business entity that attempts to maximize the joint efforts in developing a more robust control structure for risk alleviation and performance enhancement, and may thus create a performance-oriented motivation, with more emphases on performance measurements and the external network relationships as shown in Table 1. The different ownerships thus imply some sorts of working environment and cultural atmosphere that may influence the management efforts of the hotel operations, for instance, Meschi and Roger (1994) discussed the working environment impact of joint ventures, due partly to resource and cultural compatibility of the co-investors, in organizational and operational performances.

Table 1: General Data Profile, Descriptive and Cross-Comparative Analyses

Description		Frequency	Percentage	The Constructs						
				EPM	OPM	Network	OL	OM	Hotel Objective	CO
Star	Below 3 Star	78	51.7	3.81	3.80	3.76	3.76	3.74	3.70	3.76
	3 Star	60	39.7	3.88	4.01	3.93	3.94	3.85	3.88	3.96
	4 Star	13	8.6	3.77	4.06	3.86	3.92	3.67	3.48	3.69
	(F,df1,df2)				(3.192,2,148)					
	Sig. (2-tailed)				0.04					
Chain Type	Chain hotel	62	41.1	3.82	3.88	3.90	3.83	3.81	3.72	3.89
	Non-chain hotel	89	58.9	3.85	3.93	3.79	3.85	3.76	3.76	3.80
Ownership	Family-owned	112	74.2	3.87	3.90	3.83	3.86	3.79	3.78	3.85
	Public	7	4.6	3.66	3.61	3.42	3.70	3.59	3.68	3.77
	Joint-venture	32	21.2	3.76	4.01	3.96	3.84	3.79	3.65	3.80
Gender	Female	73	48.3	3.73	3.77	3.74	3.72	3.69	3.61	3.68
	Male	78	51.7	3.93	4.03	3.93	3.96	3.86	3.87	3.98
	(t,df)			(-1.866,149)	(-2.971,149)	(-1.929,149)	(-2.988,149)	(-1/933.149)	(-2.38,149)	(-2.927.137.73)
	Sig. (2-tailed)			0.064	0.003	0.056	0.003	0.055	0.019	0.004
Educator	University Degree	97	64.2	3.95	3.98	3.88	3.92	3.79	3.76	3.85
	Other	54	36	3.63	3.77	3.75	3.71	3.76	3.72	3.81
	(t,df)			(2.948,149)	(2.245,149)		(2.545,149)			
	Sig. (2-tailed)			0.00	0.03		0.01			
Duty	Front office	77	51	3.84	3.91	3.84	3.86	3.82	3.79	3.93
	Back office	74	49	3.83	3.90	3.83	3.83	3.74	3.71	3.74
	(t,df)									(1.874,149)
	Sig. (2-tailed)									0.06
Position	Below supervisor	84	55.6	3.73	3.81	3.73	3.73	3.70	3.69	3.73
	Supervisor	44	29.1	3.93	3.99	3.93	3.93	3.88	3.81	3.97
	Assistant Manager	13	8.6	3.82	4.06	3.87	3.95	3.68	3.75	3.83
	Manager	10	6.6	4.30	4.18	4.22	4.30	4.12	4.00	4.12
	(F,df1,df2)			(2.599,3,147)	(2.373,3,147)	(2.432,3,147)	(5.043,3,147)	(2.487,3,147)		
	Sig. (2-tailed)			0.054	0.073	0.067	0.002	0.063		

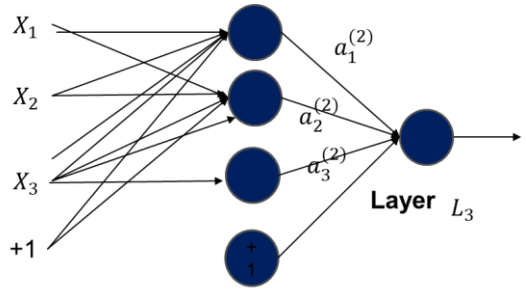
In addition, Table 1 also shows that the front-office employees perceive higher level on customer outcomes when compared to the back-offices This obvious gap can be area of strains that induce the organizational members to discover and learn how to resolve the gaps or differences, in order to develop the ability to develop insight and understanding in regaining the trusts and loyalty of the customers. The perceptual gaps between the managers and the levels below should also be emphasized, as these can prevent misunderstanding, and upon attending to them it could foster collaborative spirits and provide areas or opportunities for organizational learning and improvements of performances.

Validity and Reliability Assessments: As indicated in Table 2, the Barlett test of sphericity is significant and that the Kaiser-Meyer-Olkin measure of sampling adequacy is sufficiently greater than 0.6. With the average variance extracted (AVEs) above the threshold of 0.50, and factor loading of the measurement items exceeding 0.70 (Fornell and Larker, 1981; Hair et al. 2006), convergent validity is established. Besides, with the square-root of the AVE for each of the construct exceeding the shared correlations, as shown in the color-highlighted table cell in Table 2, the discriminant validity is maintained. Reliability of the measurement instrument is also evidenced with Cronbach alpha exceeding the minimum threshold of 0.70 (Forza, 2002).

Table 2: Mean, Convergent and Divergent Validity, Sampling Adequacy for Data Reduction, and Reliability

						The Constructs						
	Mean	Std. Dev.	α	KMO	TVE	EPM	OPM	Network	OL	OM	Hotel Objective	CO
EPM	3.84	0.6	0.853	0.714	0.773	0.88						
OPM	3.91	0.5	0.856	0.854	0.674	0.64	0.82					
Network	3.84	0.62	0.842	0.817	0.615	0.52	0.55	0.78				
OL	3.85	0.5	0.782	0.765	0.614	0.76	0.74	0.61	0.78			
OM	3.78	0.55	0.778	0.684	0.694	0.60	0.65	0.65	0.71	0.83		
Hotel Objective	3.74	0.68	0.821	0.805	0.65	0.52	0.54	0.46	0.62	0.68	0.81	
CO	3.83	0.63	0.813	0.833	0.675	0.54	0.52	0.51	0.61	0.72	0.69	0.82
			Factor loadings: All > 0.70									
			Correlations Coefficients are significant at the 0.01 level (2-tailed)**									
			The diagnoal = square root of TVE									

Neural Network Simulation: Artificial neural network (ANN) is an insight-generation tool resembling the brain neuron-synapsis networks to help examine complex relationships of social and physical events or dynamics whereby the linear models such as structural equation modeling (SEM) and multiple regressions may not be accurately feasible. The neural network configuration based on multilayer neural simulation (feedforward and backward propagation approach, with gradient descent optimization) is given in **Figure 2**. The architecture illustrates a hidden layer. As a rule of thumb, the optimal number of hidden neurons is usually between the number of the input and the number of the output neurons (Blum, 1992).



$$h_{w,b}(x) = a_1^{(3)} = f(W^T x) = f\left(\sum_{i=1}^{3} W_i a_i^{(2)} + b_1^{(2)}\right)$$

$$f: \Re \rightarrow \Re \ (activation\ function)$$

$$a_j^{(2)} = f\left(\sum_{i=1}^{3} W_{ji}^{(1)} + b_j^{(1)}\right), j = 1,2,3$$

$$J(W,b) = \frac{1}{\mathrm{m}} \sum_{i=1}^{m} \frac{1}{2} \left\| h_{W,b}(x^{(i)}) - y^{(i)} \right\|^2 + \frac{\lambda}{2} \sum_{l=1}^{n_l - 1} \sum_{i=1}^{s_l} \sum_{j=1}^{s_{l+1}} \left(W_{ji}^{(l)} \right)^2$$

$$W_{ij}^{(l)} = W_{ij}^{(l)} - \alpha \frac{\partial}{\partial W_{ij}^{(l)}} J(W,b), where\ \alpha\ is\ the\ learnign\ rate.$$

$$b_i^{(l)} = b_i^{(l)} - \alpha \frac{\partial}{\partial b_i^{(l)}} J(W,b)$$

Figure 2: Multilayer Neural Network Simulation Structure

Two staged neural networks were simulated: First, studying the important factors predicting organizational learning, as shown in **Table 3**, which notes of three constructs – EPM (employee performance measurement) and OPM (organizational performance measurement) as the key predictors. Second, three key predictors considered important to explain organizational objective are OM (operations management), CO (customer outcomes), and OL (organizational learning), in **Table 4**.

Table 3: Neural Network Simulated on Organizational Learning as the Dependent Variable

Case Processing Summary

		N	Percent
Sample	Training	101	77.7%
	Testing	29	22.3%
Valid		130	100.0%
Excluded		21	
Total		151	

Network Information

Input Layer	Factors	1	EPM
		2	OPM
		3	Network
		4	OM
		5	Overall Hotel Performance
		6	CO
	Number of Units[a]		130
Hidden Layer(s)	Number of Hidden Layers		1
	Number of Units in Hidden Layer 1[a]		12
	Activation Function		Hyperbolic tangent
Output Layer	Dependent Variables	1	OL
	Number of Units		1
	Rescaling Method for Scale Dependents		Standardized
	Activation Function		Identity
	Error Function		Sum of Squares

a. Excluding the bias unit

Model Summary

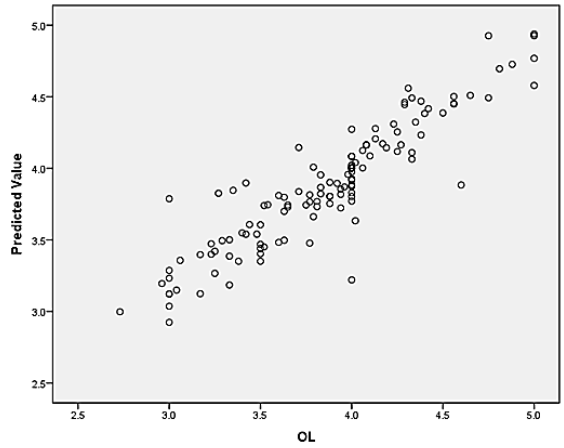
Training	Sum of Squares Error	3.854
	Relative Error	.077
	Stopping Rule Used	1 consecutive step (s) with no decrease in error[a]
	Training Time	0:00:00.33
Testing	Sum of Squares Error	6.731
	Relative Error	.507

Dependent Variable: OL

a. Error computations are based on the testing sample.

Independent Variable Importance

	Importance	Normalized Importance
EPM	.228	100.0%
OPM	.162	71.0%
Network	.183	80.3%
OM	.149	65.3%
Overall Hotel Performance	.162	71.1%
CO	.115	50.5%



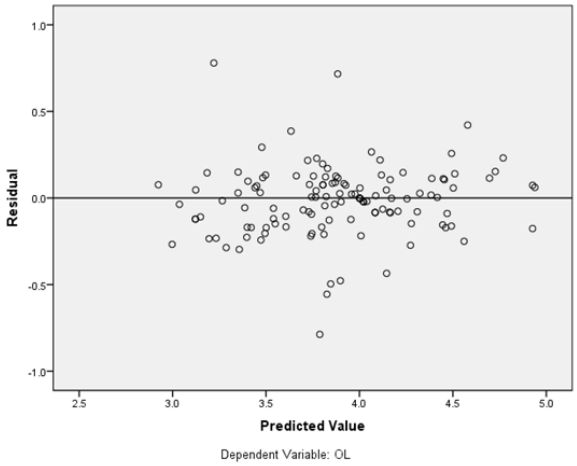


Table 4: Neural Network Simulated on Organizational Objective as the Dependent Variable

Case Processing Summary

		N	Percent
Sample	Training	101	83.5%
	Testing	20	16.5%
Valid		121	100.0%
Excluded		30	
Total		151	

Network Information

Input Layer	Factors	1	EPM
		2	OPM
		3	Network
		4	OL
		5	OM
		6	CO
	Number of Units[a]		155
Hidden Layer(s)	Number of Hidden Layers		1
	Number of Units in Hidden Layer 1[a]		10
	Activation Function		Hyperbolic tangent
Output Layer	Dependent Variables	1	OBJ
	Number of Units		1
	Rescaling Method for Scale Dependents		Standardized
	Activation Function		Identity
	Error Function		Sum of Squares

a. Excluding the bias unit

Model Summary

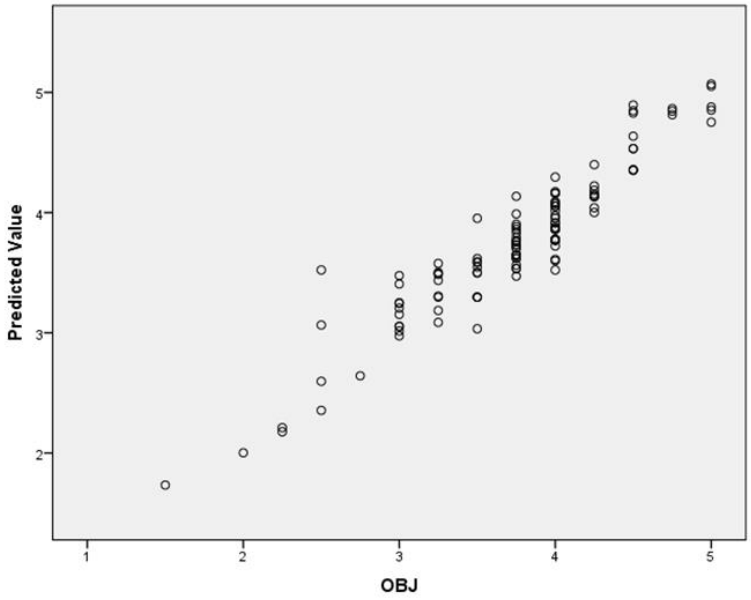
Training	Sum of Squares Error	5.252
	Relative Error	.105
	Stopping Rule Used	1 consecutive step (s) with no decrease in error[a]
	Training Time	0:00:00.66
Testing	Sum of Squares Error	1.669
	Relative Error	.198

Dependent Variable: OBJ

a. Error computations are based on the testing sample.

Independent Variable Importance

	Importance	Normalized Importance
EPM	.131	61.2%
OPM	.114	53.4%
Network	.143	66.9%
OL	.187	87.5%
OM	.213	100.0%
CO	.213	99.6%



Analysis of Structural Equation Model and Results of Hypothesis Testing: The SEM path structure is given in Figure 3, which supports the ten hypotheses stated. Based on Maximum Livelihood (ML), it shows perfect SEM model fit, with χ^2/df = 0.433, below the upper threshold of 5, at p not significant at 0.858. Increment model fits are also supported, with RMSEA = 0.000, Normed Fit Index (NFI) = 0.996, Tucker Lewis Index (TLI) = 1.017, Comparative Fit Index (CFI) = 1.000, and standardized root mean residual (SRMR) at 0.0097 (Hair et al. 2006: 748). The causal path analysis indicates that OL is an important mediator in leveraging the three predictors (EPM, OPM, Network) to influence the performances of operations management at 50 per cents of variance. Both OL and OM are important predictors of CO (customer outcome), explaining 54 per cents of its variance. OL, OM and CO, collectively, explain 55 per cents of the variance of organizational objective.

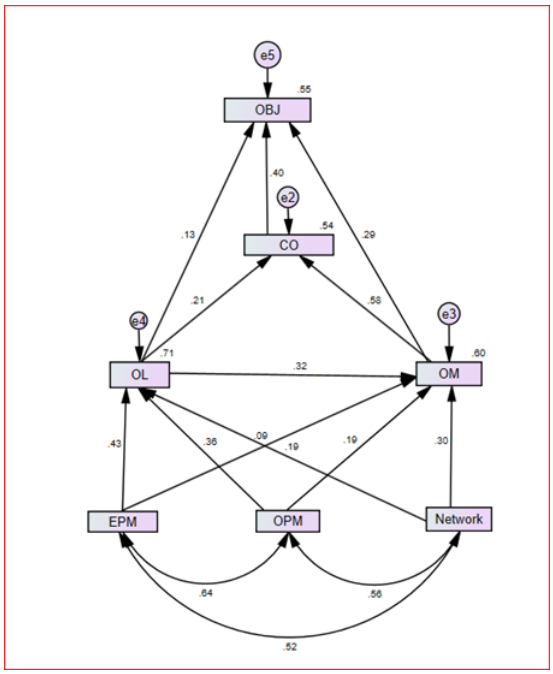


Figure 3: The Structural Equation Model

Conclusion: This research demonstrates the utility of neural network simulation to support structural equation modeling (SEM) analysis. Applying using the data from the hotel industry in Aceh, Indonesia, this research confirms the mediator of organizational learning. The learning organization combines single-loop and double-loop learning strategies, targeting on continuous improvement and learning efforts to correct performance errors, by also assessing the suitability of the current mental models. In other words, although "what gets measured gets managed" is important to improve and drive up the performance level of operations management, its role is better leveraged when organizations engage in learning. Performance measurements can exploit the strategic expectations at both employee- and organizational levels. The path structure also shows that network shares the similar role as employee- and organizational levels of performance measurements to influence organizational learning and operations management. Thus, supplier network can be treated as an extended performance measurement to provide the perspectives needed for supporting strategic and operational managements.

The SEM path structure also confirms the Balanced Scorecard (BSC) logics, demonstrated by the three predictors (namely, organizational learning, operations management, and customer outcomes) to deliver organizational objectives.

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BUSINESS ACUMEN - BETTER MANAGEMENT

M.LALITHA SREE

Abstract: Business acumen delivers a rich set of benefits that drive significant and tangible return on investment. It removes the complexity of converting raw data into meaningful business intelligence by giving organizations the power to transform data from multiple sources into accurate, consumable information that can be shared securely throughout the enterprise. It enables users to make informed business decisions quickly and confidently by providing the query and reporting tools they need to find, share, manage, publish and analyze information. The goal of business acumen is to enable management to make more intelligent decisions on the basis of knowledge extracted from data. Thus, data gives information, information gives knowledge and knowledge gives an idea to do things in quicker and more productive manner.

Business acumen is a complex competency that far too many organizations leave to chance. In fact many organizations simply hope to hire outside talent to boost their internal core of industry and market knowledge. As the job market tightens and the competition for talent increases , this option looks less strategic and more like a research to issues.

Organizations need a strategic effort to boost the level of business acumen among employees, increasing knowledge, financial acumen and market awareness cannot happen in a void or a vacuum. Organizations must be actively engaged in this effort by fostering a culture where continuous improvement is the norm and learning is an everyday part of culture.

Keywords: Business Acumen, Business Intelligence, Business Decision Making, Analytics, Management, Innovation.

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SKILLFUL USE OF ENTERPRISE RISK MANAGEMENT (ERM) IN LEVERAGING STRATEGY SUCCESS AND HOLISTIC BSC-BASED HOTEL PERFORMANCES

KANTHITA DAMKAM, DR. CHAI CHING TAN

Abstract: Realizing that enterprise risk management (ERM) is not a straightforward topic or a competence to master, it is important empirical research can find a way to convince the management team to adapt ERM. This research exploits the concept of strategic management, underpinning on a logic that a strategic match of both internal management focus and external environmental condition is crucial for strategy success. Based on the structural equation model (SEM) model tests using Maximum Livelihood (ML) function, it confirms that, as the competitive environment becomes more challenging, the roles of mission clarity and core value communicated to the organizational members, and establishing risk governance system and cultures, become very important and should be aligned. This research extends beyond this fundamental concept, stressing that risk management can function to reduce loss possibility of strategy execution, which leads to SEM confirming ERM as a significant mediator. Besides, this research contributes further to exhibit linkages of both strategy success and ERM to BSC-based performances, which makes the ERM and strategic management more holistic in nature. The accomplishment was based on 215 valid returned participations of the hotels located in Uttaradit and Phitsanulok, Thailand. Besides the theoretical contributions, this research makes use of statistical comparative analyses of many demographic variables (i.e. position, type of job, number of hotel rooms, service types, HR and hotel operations) to offer a rich spectrum of practical implications.

Keywords: Balanced Scorecard, COSO, Enterprise risk management, Hotel performance, Strategy

Introduction: Business in the 21st century is more complicated, unstable and uncertain than in the past. Risk and uncertainty are inseparable business conditions and attributes today [1], alongside with strategies, which must be deliberated as a part of the strategic and performance management systems of the organizations [2]. In particular, a concept involving enterprise risk management (ERM) evolves to be essential, as it is holistic and embraces company-wide participation, and when coordinated well, ERM has proven to effectively support the implementation of strategies and improve the chance of success [3]. Enterprise risk management (ERM) has been reported to evolve from low-level or process-driven risk management to higher-level, that is at the enterprise-level. ERM provides numerous important functions, for example to help the firm to establish, evaluate and report on their internal controls [4], and thus, helps organization manages risk in effective way.

There is a high competition among tourism and hospitality sector. Hotel sector is significantly important to the overall economy in Thailand. In 2016, the total number of hotel rooms has increased to 25.7% which causes higher-level market of room supply, and thus intensifies the competition and raises urgent need to reduce uncertainty and risk in strategy formulation and implementation. Moreover, expansion of investment in hotel business is affected by the increasing of tourists' number and spending as well [5]. "Thailand's international visitors were up by 7.54% over 2017, and the estimated 2.007 trillion Baht in tourism revenue was up by 9.63%. Tourists to Thailand are expected to increase from 38.27 million to 41 million" [6]. Along with the increase of foreign tourists, the accommodation occupancy rate (AOR) would also get the benefits, but is subjected to the ability of Thai hotels to differentiate their strategies and manage risk – a thematic focus of this research. AOR, according to Bank of Thailand, and reported by [7], fluctuates above 60%.

Phitsanulok and Utttaradit are attractive areas to explore. Phisanulok is located in the lower northern part of Thailand. Neighboring provinces is Uttaradit, which is located in the upper north of Thailand. These two provinces have many interesting tourist attractions, especially they have rich natural, historical and cultural resources that the tourism and hotel sectors can make use of. Fig. 1 identifies the locations of the two provinces targeted in this research.

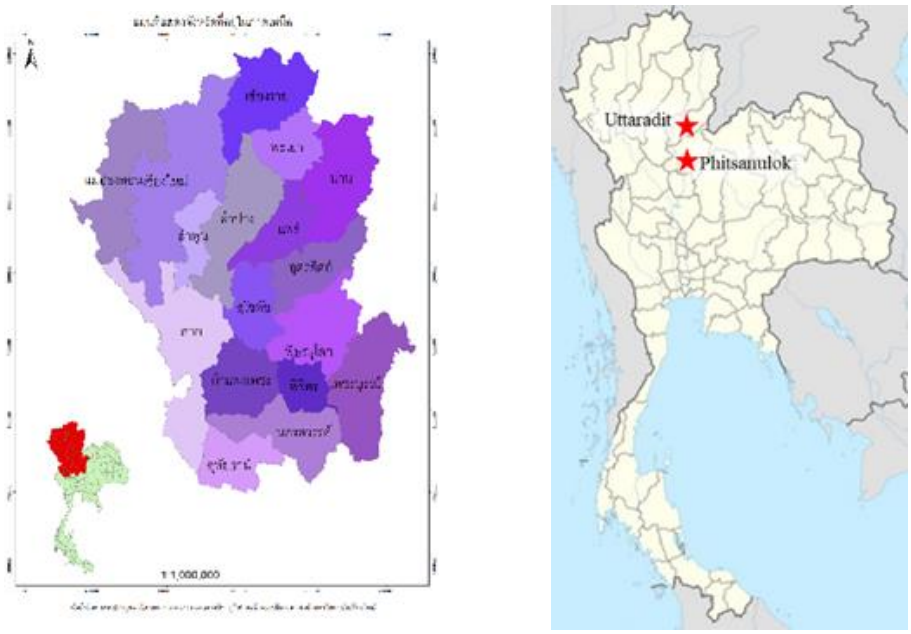

Fig. 1: Northern part and Uttaradit, Phitsanulok Map. (Source: Wikimedia)

Phitsanulok and Uttaradit are among the routes to northern Thailand and, in fact, can be reckoned as a main transportation hub linking the central provinces to the north of the country. Many travelers pass through these two provinces. Reference [8] reported that Phitsanulok and Uttaradit currently have more than 4 million tourists, consisting of domestic tourists, international tourists and excursionist, who also use the services of hotels, guesthouses and other type of accommodations; meanwhile, hotel number is on the rise.

There are many reasons that influence the competition in hotel market. Present economic changes, preferences of customers, prices and industrial situations, and externally caused risk factors can collectively impact on hotel's demands and performances. The steadily increasing oversupply of accommodation to the market, especially in the most important tourist areas, and the spread of online booking systems, may increase competition on price [9]. Customers have many choices to select, such as traditional hotel establishment, a more contemporary version like Airbnb, hostels, or guesthouses. Due to wide variation of players in the accommodation sector, the traditional hotel establishments are under the pressure to improve their offers [9]. Reference [10] noted that "the fierce competition, the bargaining power of clients, the dependence on suppliers, the constant demand for innovation, changes in the regulatory environment, the new expectations of society" (p. 66). These have made the organizational environment more complex. Nevertheless, how these environmental conditions influence on the mission clarity and a need for stronger corporate governance is not obvious, particular in the context of enterprise risk management. Reference [10] have widely acknowledged that "the main risks concentrate on the risks present in the relationships with agents in the business environment" (p. 66). In short, enterprise risk management, to be successful in reducing risk and improving strategy success [11], has to establish its relationships with the business environment, which is a part of this research aiming to be theoretically rationalized and empirically validated. The dynamicity and complexity of the markets and business environment, as also argued in [12], can seriously deter the efforts of the organizations, and present huge obstacles for them to chart the right course for their continued success (p. 1017).

To help organizations chart towards the right course in more robust manner, enterprise risk management (ERM) comes to assistance, albeit at a significant investment effort by firms [13]. Nevertheless, as it was stated above, and "regardless of the increased number of studies on risk management in various firms, limited studies have strived to reveal the components driving and obstructing ERM" (p. 402). In particular, a systems-thinking framework is lacked in ERM context [14], in

simple implementable manner. The current COSO framework of ERM is rather detailed as it follows a step-wise process [15].

To be precise, through enterprise risk management measures, hotels can mitigate risk and plan to deal with impacts that cause from uncertain events, which is the essential motive for this research. The latest version of COSO ERM framework is adopted, and is integrated with the Balanced Scorecard (BSC) concept, as way for structuralizing the perspectives of hotel performances. Towards this end, the following research objective is aimed:

> *The purpose of this study is to conceptualize a model that establishes a strategic linkage between the environments of hotels and efforts in enterprise risk management (ERM), and further studies how these environmental considerations and EMR will impact on strategy success and organizational performances. Specifically, the external environment would consider the number of competitors, technological changes, pricing competition and government regulation, as manifestations of the forces exerted on the hotel organizations. On the internal environmental domain, corporate governance and culture, and mission clarity are incorporated. The performance of organization will take a more holistic view by means of Balanced Scorecard (BSC) concept.*

Literature Review: Characteristics of Enterprise Risk Management: Enterprise risk management (ERM) is defined by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) as "a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives" [16] (p. 3). From the definition just stated, ERM demonstrates numerous important characteristics, which can be categorized in terms of:

> Why – ERM is primarily motivated by the potential possibility of the executed and formulated strategies to deviate from the expectation or corporate objective
> How – ERM is a process, and is a holistic approach, targeted at the enterprise-level to risk management. Reference [17] recognizes EMR as a formal part of the decision-making process. From ethical viewpoints [18], ERM can be reckoned as a rule-based or principle-based framework [4].
> What – Risks are broad-based, i.e. insurable risk, financial risks, operational risks. Insurable risk stresses the nature of risks transferred to insurance companies, and such risks are generally related to "natural catastrophes, human error, or fraud, but as the scope of insurance markets expanded, some types of commercial risks could also be transferred such as credit risks" [17] (p. 360). Risk is also an inherent property of an organization, particularly associated with strategy formulation and execution. In other words, ERM is an integral part of a company's strategy, whether at corporate level, business level, global level, or operational level [19].

Factors Potentially Affecting ERM: A range of internal and external factors can cause the outcomes of a company's strategies to depart from the deliberated version [17] .Putting in another words, risks could emanate from the market, or from firm-specific or non-markets [11], such as due to insufficient strategy-focused culture [20] and clarity and commitment in company mission [19]. When the external risk-pressures are higher, such as due to the number of competitors, changes in technologies, and government regulations, the more pressing is the need for organizations to establish good corporate governance system and commitment [21], culture and make clarity of company mission [19]. In other words, organizations view the firm's external context as a source of isomorphism [22]. These arguments support the following hypothesis:

H :1 There is a positive relevancy in between the external environment and internal environment consisting of (1corporate governance and culture, and (2mission clarity.

Rationales to the Approaches of ERM: As argued in [11] (p. 32), "getting the right assumptions" to approach ERM is very important, but is not straightforward, and to reduce this impact, they introduce the Balanced Scorecard (BSC) concept as a way to help organizations proving of their assumptions in terms of cause-and-effect linkages of the factors or risk-reduction measures. BSC was introduced by [23], and its concept was further extended to strategy mapping [24], which stresses on alignment [25] by making use of strategy-focused corporate culture [20].

Defined by risk as the possibility of loss caused by unsuccessful strategy implementation, whether for either intentional (due to ethical misconduct) [18], or unintentional reasons (due to error made unknowingly) [11] (p.(32 , ERM should be deliberated to improve strategy success, by appropriately considering external environment, and by making clear of mission and establishing culture and rule- and principle-based corporate governance.

Organizational culture has the ability to influence at enterprise-wide level, due to its inherent nature as mental programming [26] (p.(4 , and thus can influence the leadership, execution, rituals, and values of the organizations (p. (10-7, and fundamentally, has the stability function – that is, to stabilize the organization (p. .(11Along similar argument as [26] noted, by treating culture as mental programming, [27] define culture as "the pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems" (p. .(6-5

In short, the following hypotheses are therefore raised that establish the causal impact of both internal and external factors on ERM and strategy success as follows:
H :2 External environment has significant influence on ERM.
H :3 External environment has significant influence on strategy success.
H :4 Internal environment, which consists of corporate governance and culture, and mission clarity, can significantly explain the variance of ERM.
H :5 Internal environment, which consists of corporate governance and culture, and mission clarity, can significantly explain the variance of strategy success.

"Facing complexity and being able to focus in the face of it rather than retreat from it and pretend that it does not exist," as argued in [28], is the heart of good strategic thinking, which is reflected in the hypothetical relationship linking both internal and external environments to strategy success. Furthermore, judging from the previously stated definition of risk, referred as the possibility of the strategy execution will not be successful [11], we can establish therefore that ERM can directly contribute to improve strategy success, leading to the next hypothesis connoting a characteristic of strategy, as both emergent and complex, and deliberating [29], in which ERM can serve as a management control system [30]:
H :6ERM can positively and significantly influence strategy success.

A logical extension of H-1H6, in the aforementioned, is the linkage of both strategy success and ERM to contribute to organizational performances, which are operationalized, in more integrative and holistic manner, via the four BSC perspectives. In other words, the purpose of ERM is aimed to minimize or reduce the possibility of loss, or increase the possibility of success, which in turn, lead to organizational performances as represented by the four performance perspectives, namely learning and growth, internal business processes, customer and financial performances [31]. ERM practices are not only necessary for improving the performance of an organization, but also contribute to reduce different types of risk exposure [32]. Successful ERM strategies enable businesses to maximize their profitability and efficiently manage risk [33]. Specifically, by constantly monitoring the total performance of the enterprise, steadily watching "the efficiency, profitability, cash flow and exposure of each of the enterprise's important clients," and putting in place "a system of warning signals for all activities and act

decisively if an out-of-control condition is detected," as manifested and regulated in ERM, the four BSC performances can potentially be realized. Thus, the following hypothesis is raised:
H :7 Both ERM and strategy success lead to the four BSC performances.

Besides, as shown in [24] Kaplan and Norton's ((2004strategy mapping concept, the four BSC performances are interrelated, and in particular, of the logic that learning and growth drives internal business processes, which in turn, drives performance manifested by customers accepting the value proposition and its services, and thus, financial achievement [34]. In other words, there is a causal relationship of the four BSC performance perspective, as articulated in the following hypothesis:
H :8 There is a causal relationship of the four BSC performance perspective.

As a conclusion of the literature review, the following theoretical framework is derived and the next section would discuss the methodological design to provide the empirical evidences to the framework shown in **Fig. 2**.

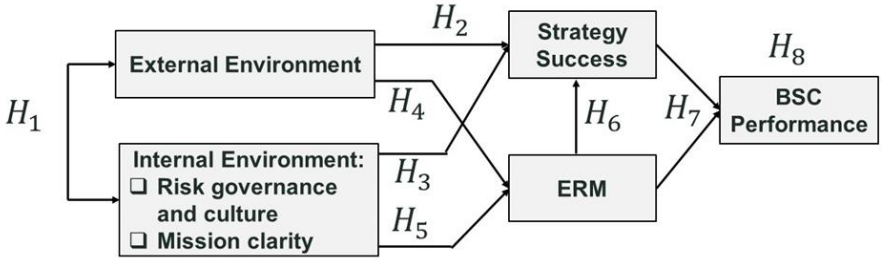

Fig. 2 : The Conceptual Framework of the Research

Research Method: Sampling and Data Collection: The population of this study is hotel owners and employees (manager and non-manager positions) working in the hotels located in Muang district, Uttaradit and Muang district, Phitsanulok, Thailand. Based on the information from the Department of Provincial Administration of Thailand, there are 155 hotels registered in these areas. According to the Ministerial Regulation B.E. 2551 (2008), hotels are classified into 4 types, based room number and the provided services, as shown in Table I. Reference [35] states that in case of unknown population, a sample size of 385 is suggested with 95% confidence level. Researcher contacted the HR department of each hotel and required minimum respondent's criteria of each position, which is one owner, one manager and three non-managers. After agreement was obtained, a total of 450 questionnaires sets were distributed to 32 hotels in these two provinces from August 2019 to September 2019, as shown in Table I. Data were collected directly by paper-based questionnaires. Eventually, there are 215 valid questionnaires returned and have been used for result analysis, which is around 48% response rate and matches the typical response rate in business and management research: between 30% and 80% [36].

Table I: Targeted Population and Sampling

Targeted population									
Targeted areas	**Hotel type**								**Total**
	Type 1		**Type 2**		**Type 3**		**Type 4**		
Phitsanulok (PHS)	55		21		12		12		100
Uttaradit (UTT)	43		9		0		3		55
									155
Sampling/ participated									
Hotel type	**Type 1**		**Type 2**		**Type 3**		**Type 4**		**Total**
Targeted areas	**PHS**	**UTT**	**PHS**	**UTT**	**PHS**	**UTT**	**PHS**	**UTT**	
Number of hotels participated	11	2	12	2	1	0	3	1	32
Distributed questionnaires	110	20	180	40	20	0	60	20	450
Valid questionnaires collected	54	11	82	26	12	0	20	10	**215**

Note: PHS refers to Phitsanulok and UTT refers to Uttaradit.
Type 1: Hotels provide accommodation only and the number of rooms do not exceed 40 rooms.
Type 2: Hotels provide accommodation and catering or restaurant services, the number of rooms do not exceed 80 rooms.
Type 3: Hotels provide accommodation, catering or restaurant services and conference rooms or entertainment venues.
Type 4: Hotels provide accommodation, catering or restaurant services, conference rooms and entertainment venues.

Measurement Instrument: For the testing of model constructs and the validity of the interaction structure, the questionnaire design was selected as the quantitative method. Validity and reliability of the constructs are defined by aligning the constructs with the scope of the concepts, i.e. strategy, hotel performance, ERM and BSC, along with their definitions. In the pilot-testing process, we approach three subject experts: Two with sufficient knowledge of strategy and ERM, and another on research methodology. The reliability measures include the use of statements in language and in ways that can easily be understood instantly, reflecting easy recall or routine perceptions of the hostel employees. The questionnaire instrument is arranged into two sections. Section one describes the respondent's and hotel's demographics. In section two, the constructs are measured by using five-rating scale items targeting on level of agreement (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). There are five parts in section two, namely internal environment, external environment, enterprise risk management (ERM), strategy success and hotel performance, with a total of thirty-five measurement items. The statement details of the measurement items are given and discussed in the next section "Result and Discussion", along with the validity and reliability assessments of the constructs.

Data Analysis: In this study, the data were analyzed using AMOS-based structural equation modeling (SME) and IBM SPSS package, involving also T-test, ANOVA tests, factor analysis, correlations and multiple regression. SEM provides the stringent base for hypotheses testing as well as examining for additional insights such as the mediating role of ERM for leveraging the ability of both internal and external considerations to deliver strategy success. Both incremental and absolute fit are examined in SEM. Cronbach's alpha coefficient is used to evaluate the internal consistency of the measurement items describing the construct, evidenced with the coefficient exceeding 0.70 [37]. Exploratory factor analysis was undertaken as a part to contribute to the validity assessments of the instrument and the results obtained, describing the total variance explained (TVE) and factor loadings, and the unitary dimensional nature of the constructs shown in the next section.

Result and Discussion: Descriptive profile: A valid 215 responses set is used for the statistical analysis. The respondents hold position as owner, manager and non-manager, and among them, female at 70.7%. Back office accounted for 57.8%, and 42.3 % have less than 3 years of working experience and 79.3% of them also have less than 3 years working experience in hotel. The local residents occupy 75.8% and non-local residents at 24.2%. Among them, 50.7% have Bachelor degree. More than 70% are shown associated with 3-star hotels and majority of hotels have less than 40 rooms (44.7%), and less than 25 employees (43.7%). Additional to that, 47.4 % of hotels' year operation is between 6 -10 years. The responses are associated with: commercial hotel (75.8%), resort hotel (13%) and boutique hotel (11.2%). 76.3 of these hotels are independent type.

Result of Validity and Reliability Assessment: Tables II and III present the measurement statements of the constructs studied, evidencing that the reliability, convergent and divergent validity thresholds and requirements are met. With factor loading exceeding 0.70, TVE well above the 0.5 threshold, and reliability index exceeding 0.70 minimum threshold on Cronbach's Alpha, the convergent validity is well established.

Table II: Measurement Instrument

Constructs	**Items**	**Cronbach's Alpha**	**Factor Loading**	**Mean**	**Standard Deviation**
Internal Environment					
Mission Clarity:					
Vision, mission and core value	Vision, mission and core value are clearly defined.	0.899	0.92	3.63	0.84
	Vision, mission and core value are communicated to us.		0.94	3.65	0.82
	We know our job contributed to vision, mission and core value.		0.87	3.92	0.85
Objectives	Objectives are set according to hotel strategy.	0.901	0.90	3.70	0.82
	Objectives are set for all job function.		0.92	3.84	0.92
	Objectives are set to get to our vision.		0.92	3.84	0.83
Risk Governance and Culture	We have to a work system (i.e. procedures, process, guidelines) to aim to minimize uncertainties that may lead us to fail.	0.903	0.88	3.69	0.85
	Overall, we work together to meet our objectives.		0.88	3.87	0.82
	Our organization monitors and controls to meet our objectives.		0.90	3.83	0.89
	Our organization provides constant review of our work performance.		0.87	3.84	0.89
External Environment	Number of competitors	0.786	0.75	2.74	0.50
	Technology change		0.84	2.62	0.52
	Hotel price competition in the market		0.82	2.70	0.49
	Government regulation		0.72	2.48	0.59
Enterprise Risk Management					
Strategy development risk management	We consider and take actions on anything that can make us not able to implement strategy.	0.828	0.83	3.64	0.76
	We invest necessarily (i.e. training, system) to enable us to implement strategy.		0.87	3.63	0.90
	We think through and discuss most factors that may influence the success of our strategy design and implementation.		0.89	3.74	0.78
Performance risk management	Anything that may cause us to deviate from target will be targeted and solved.	0.863	0.88	3.65	0.72
	We take necessary corrective actions if anything arises to prevent us to deliver our performance.		0.91	3.82	0.81

	We take necessary preventive action if anything arises to prevent us to deliver our performance.		0.88	3.77	0.80
Information, communication and reporting risk management	Our company shares information in right form to help us implement strategy and meet objectives.	0.866	0.87	3.72	0.75
	We report our progress and also areas of challenges to prevent us from winning.		0.90	3.76	0.77
	We communicate our progress and areas of challenges so together, we can solve problems.		0.90	3.79	0.81
Strategy Success	Our strategy attract more customers to stay at our hotel.	0.904	0.92	3.82	0.84
	Our strategy is capable to make us achieve our objectives.		0.92	3.80	0.86
	Our strategy is clearly able to give us clear direction for everyone to do perfect job.		0.91	3.80	0.91
Performance					
Financial	Our hotel has been able to meet our revenue target.	0.893	0.95	3.68	0.86
	Our hotel has been able to meet our cost and budget control.		0.95	3.71	0.90
Customer	Our hotel quite well-received by the market.	0.814	0.92	3.87	0.85
	We hardly have bad/severe customer complaint.		0.92	3.68	0.94
Internal business process	To my knowledge, our hotel is operated to desired quality standard.	0.908	0.96	3.81	0.90
	To my knowledge, our hotel's operation is managed to expectation.		0.96	3.80	0.92
Learning and growth	In general, our hotel's stuffs are well trained to execute hotel strategy.	0.893	0.89	3.64	0.94
	In general, our hotel has good working environment.		0.94	3.78	0.89
	In general, our hotel has up-to-date information to guild our continuous improvement.		0.89	3.77	0.93

Beside the aforementioned indicators i.e. reliability and TVE, Table III further supports the divergent validity, with the square-root of TVE exceeding the cross correlations coefficients.
Note: VMC stands for vision, mission and core value, OBJ objectives, RGC risk governance and culture, EE external environment, SDRM strategy development risk management, PRM performance risk management, ICRRM information, communication and reporting risk management, SS strategy success, FIN financial, CUS customer, IBP internal business process, and LG learning and growth.

Comparative Study: Table IV provides a comprehensive detail of the construct profile and the cross-group comparisons. The color-coded highlights the areas of significant differences identified by means of either t-test (for 2 variables comparison) or ANOVA (for 3 or more variables comparisons).

Table III: Mean, Convergent and Divergent Validity and Reliability.

						The Constructs											
	Mean	**Std. Dev**	**α**	**KMO**	**TVE**	**VMC**	**OBJ**	**RGC**	**EE**	**SDRM**	**PRM**	**ICRRM**	**SS**	**FIN**	**CUS**	**IBP**	**LG**
VMC	3.73	.76	.90	.71	.83	.91											
OBJ	3.79	.79	.90	.75	.84	.682**	.91										
RGC	3.81	.76	.90	.84	.78	.672**	.773**	.88									
EE	2.64	.41	.79	.76	.62	.171*	.278**	.265**	.78								
SDRM	3.67	.70	.83	.71	.75	.529**	.582**	.617**	.263**	.86							
PRM	3.74	.69	.86	.73	.79	.551**	.572**	.621**	.258**	.697**	.89						
ICRRM	3.75	.69	.87	.73	.79	.515**	.622**	.640**	.271**	.689**	.706**	.89					
SS	3.81	.80	.90	.76	.84	.507**	.608**	.591**	.251**	.611**	.691**	.702**	.92				
FIN	3.69	.83	.89	.50	.90	.502**	.629**	.591**	.196**	.584**	.598**	.726**	.701**	.95			
CUS	3.77	.82	.81	.50	.84	.515**	.548**	.569**	.186**	.620**	.666**	.656**	.716**	.660**	.92		
IBP	3.81	.87	.91	.50	.92	.494**	.602**	.546**	.195**	.655**	.668**	.695**	.733**	.677**	.756**	0.96	
LG	3.73	.84	.89	.71	.83	.484**	.576**	.599**	.215**	.615**	.688**	.672**	.710**	.676**	.732**	0.767**	0.91
						Factor loading: all >0.70											
						Correlation Coefficients are significant at the 0.01 and 0.05 level (2 tailed** and 1 tailed*)											
						The diagonal = Square root of TVE											
						Criterion for divergent: The diagonal must be higher than the cross-correlations coefficients.											

Table IV: General Data Profile, Descriptive and Cross-Comparative analysis

				Internal Environment				**Enterprise Risk Management**				**Performance**			
				Mission Clarity											
		Frequency	**Percentage**	**Vision, mission and core value**	**Objectives**	**Risk Governance and Culture**	**External Environment**	**Strategy Development Risk Management**	**Performance Risk Management**	**Information Communication and Reporting Risk Management**	**Strategy Success**	**Financial**	**Customer**	**Internal Business Process**	**Learning and Growth**
Gender	Male	60	27.9	3.78	3.77	3.80	2.68	3.70	3.88	3.87	3.91	3.83	3.93	3.94	3.80
	Female	152	70.7	3.71	3.80	3.81	2.62	3.66	3.69	3.71	3.77	3.64	3.72	3.76	3.71
	Other	3	1.4	3.67	3.78	3.83	2.67	3.44	3.67	3.78	3.89	3.50	3.67	3.67	3.56
Position	Owner	6	2.8	3.61	3.67	3.50	2.63	3.72	3.67	3.67	4.00	3.75	3.92	4.17	3.72
	Manager	14	6.5	4.48	4.26	4.29	2.59	3.91	4.17	4.22	4.21	4.18	3.89	4.29	4.14
	Non-Manager	195	90.7	3.68	3.76	3.78	2.64	3.65	3.72	3.72	3.77	3.66	3.76	3.76	3.70
	Sig.			0.001		0.034				0.034					
Type of Job	Front Office	75	35.8	3.72	3.76	3.77	2.61	3.57	3.71	3.68	3.72	3.55	3.74	3.68	3.67
	Back Office	120	57.2	3.66	3.77	3.79	2.66	3.70	3.72	3.75	3.81	3.72	3.78	3.82	3.72
	Both	20	7	4.22	4.08	4.05	2.60	3.85	4.02	4.05	4.15	4.05	3.90	4.25	4.02
	Sig.			0.01										0.034	
Year of Work (Overall)	Less than 3 years	91	42.3	3.66	3.68	3.75	2.60	3.63	3.67	3.68	3.74	3.61	3.81	3.75	3.69
	3-5 years	54	25.1	3.91	3.94	3.99	2.65	3.71	3.89	3.91	3.92	3.88	3.78	3.86	3.83
	More than 5	70	32.6	3.70	3.83	3.74	2.67	3.70	3.72	3.72	3.80	3.66	3.73	3.84	3.71

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	years														
Year of Experience(Hotel)	Less than 3 years	106	49.3	3.67	3.69	3.76	2.63	3.62	3.66	3.66	3.74	3.59	3.79	3.74	3.66
	3-5 years	58	27	3.85	3.93	3.95	2.67	3.74	3.88	3.93	3.92	3.90	3.79	3.90	3.86
	More than 5 years	51	23.7	3.73	3.86	3.74	2.62	3.69	3.77	3.75	3.82	3.67	3.72	3.86	3.73
Resident	Local Resident	163	25.8	3.69	3.78	3.78	2.64	3.62	3.72	3.74	3.77	3.68	3.73	3.76	3.71
	Non-local Resident	52	24.2	3.87	3.83	3.89	2.61	3.84	3.81	3.81	3.91	3.74	3.91	3.95	3.81
	Sig. (2-tailed)							0.05							
Education	Below Bachelor	102	47.4	3.66	3.66	3.65	2.57	3.61	3.60	3.63	3.66		3.68	3.71	3.60
	Bachelor	109	50.7	3.81	3.93	3.95	2.69	3.73	3.88	3.87	3.95	3.76	3.88	3.92	3.85
	Master or above	4	1.9	3.42	3.58	4.00	2.69	3.42	3.67	3.67	3.75	4.00	3.50	3.38	3.84
	Sig.				0.04	0.02			0.02	0.03	0.03				
Star Category	2 Stars	9	4.2	3.78	3.70	3.72	2.42	3.81	3.78	3.70	3.67	3.33	3.83	3.50	3.70
	3 Stars	154	71.6	3.74	3.80	3.80	2.66	3.66	3.71	3.71	3.80	3.67	3.75	3.80	3.70
	4 Stars	39	18.1	3.77	3.88	3.90	2.60	3.71	3.86	3.93	3.89	3.87	3.86	3.97	3.91
	5 Stars	13	6	3.54	3.49	3.67	2.63	3.62	3.77	3.72	3.77	3.65	3.73	3.65	3.54
Number of Room	Less than 40 rooms	96	44.7	3.75	3.75	3.77	2.57	3.63	3.71	3.60	3.71	3.57	3.66	3.65	3.63
	41-79 rooms	77	35.8	3.71	3.72	3.77	2.66	3.55	3.68	3.76	3.81	3.68	3.74	3.81	3.67
	More than 80 rooms	42	19.5	3.73	4.03	3.95	2.74	3.98	3.95	4.08	4.02	4.00	4.11	4.19	4.07
	Sig.							0.00		0.00		0.20	0.01	0.00	0.01
Hotel type	Commercial Hotel	163	75.8	3.69	3.76	3.77	2.65	3.65	3.72	3.72	3.78	3.71	3.75	3.79	3.73
	Resort Hotel	28	13	3.86	3.88	3.88	2.67	3.63	3.76	3.92	4.00	3.71	3.82	3.91	3.77
	Boutique	24	11.2	3.90	3.93	3.96	2.49	3.86	3.86	3.76	3.75	3.52	3.88	3.81	3.71

	Hotel														
Management type	Independent Hotel	164	76.3	3.74	3.79	3.79	2.65	3.66	3.73	3.75	3.78	3.67	3.79	3.83	3.76
	Chain Hotel	51	23.7	3.70	3.79	3.88	2.60	3.71	3.79	3.78	3.89	3.76	3.73	3.75	3.64
Services type	Room only	65	30.2	3.69	3.66	3.68	2.58	3.54	3.55	3.54	3.62	3.47	3.53	3.48	3.58
	Room plus other services	150	69.8	3.75	3.85	3.86	2.66	3.73	3.83	3.85	3.89	3.79	3.88	3.95	3.80
	Sig. (2-tailed)								0.008	0.003	0.02	0.009	0.04	0	
Number of employees	Less than 25 people	94	43.7	3.63	3.69	3.71	2.58	3.57	3.63	3.60	3.67	3.51	3.56	3.56	3.57
	26-50 people	82	38.1	3.79	3.78	3.85	2.62	3.69	3.85	3.81	3.81	3.76	3.87	3.91	3.76
	51-75 people	9	4.2	3.96	3.81	3.81	2.78	3.56	3.56	3.55	3.89	3.89	3.94	3.94	3.93
	76-100 people	18	8.4	3.76	4.15	4.10	2.90	4.35	4.11	4.31	4.32	4.36	4.44	4.50	4.35
	More than 100 people	12	5.6	3.97	4.11	3.83	2.71	3.36	3.47	3.86	4.00	3.54	3.63	3.92	3.72
	Sig.						0.03	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.01
Year of hotel operation	Less than 5 years	78	36.3	4.07	3.96	4.01	2.64	3.79	3.88	3.79	3.97	3.80	4.01	3.95	3.85
	6-10 years	102	47.4	3.64	3.81	3.79	2.60	3.68	3.73	3.82	3.83	3.74	3.79	3.86	3.79
	11-15 years	25	11.6	3.09	3.27	3.29	2.76	3.25	3.43	3.35	3.25	3.22	3.14	3.22	3.25
	More than 20 years	10	4.7	3.63	3.67	3.75	2.65	3.67	3.63	3.77	3.67	3.55	3.35	3.65	3.40
	Sig.			0	0.002	0.001		0.011	0.037	0.019	0.001	0.018	0	0.002	0.008

Numerous important insights are revealed from the comparative studies and are stated in the following. The respondents who work in managerial position acknowledged that vision, mission and core values are made clear and communicated and that their jobs contributed to them, and objectives are well aligned with hotel strategy that they hold to the belief that job functions are designed to achieve objectives and will lead them to accomplish the vision. These managerial positions also are more involved than other position, significantly, on risk governance and culture, involving tasks like monitoring and control to meet objectives, constant review of work performance, and a work system (i.e. procedures, processes, and guidelines) to aim to minimize uncertainties that may lead the hotel to fail, particularly by making use of the "information, communication and reporting risk management" aspect of enterprise risk management (ERM).

Respondents whose tasks involve both back-office and front-office have clearly understood internal environment in hotel more than respondents who work only either front-office or back-office. Even they are not statistically significant, this group of respondents projecting higher means value in internal environment, enterprise risk management and strategy success, which are contributed to better hotel performance, especially in their working processes. Having tasked both ways, back-office and front-office, they project higher level of clarity of vision, mission and core value and acknowledged that their jobs clearly contributed to them. Significantly, they are also shown to the perceptual fact that the hotel is operated to the desired quality standard and the operation is managed to the expectation. In resident section, the non-residents consider the efforts on enterprise risk management, especially in strategy development of risk management, more than the residents, and is statistically significant. The reason behind the higher level of perceptual ERM could be owed to the fact that they are employed from outside the local residence for their job roles, and had gained the additional experiences and attitude in dealing simultaneously with strategy and enterprise risk management, causing them to have higher understanding in ERM and they acquire the ERM practices in their jobs in terms of discussion and taking actions on anything that can make them not able to implement strategy and success of their strategy more than the resident group.

Those with Bachelor degree significantly perceives higher on the constructs investigated in view of the ERM model. Group of employees who work in hotels which have more than 80 rooms, considered as a large size hotel, take actions more on ERM aspects. Group of employees who work in hotels providing room and other services have better cognition of what is the situation and anything that will consider as a risk in their jobs and is knowledgeable of how to solve the problems. Moreover, they have communicated the risk information that is important to their job with colleges. Effective ERM practices in hotel can contribute to hotel's higher strategy success, leading to positive effect in better performance that embraces financial, customer and internal business performances. Hotels with more rooms and more employees also consider ERM at a higher level than the lower-room counterparts, leading to better performances across the four BSC perspectives, which supports the findings of, for instance, [13], [38], partly attributable to the complexity increase with room and employee numbers.

Model Fit Test: The goal in SEM analysis is to estimate model parameters such that a function of the discrepancy between S and $\widehat{\Sigma}$ (variance/covariance matrix implied by the population parameters for the hypothesized model) is minimized. To be specific, the purpose of SEM model estimation or model fit is to find a set of model parameter θ to produce $\sum(\theta)$ so that $[\sum - \sum(\theta)]$ can be minimized, where $\sum(\theta)$ denotes the population covariance matrix of observed variables. The model is tested based on Maximum Likelihood (ML) function:

$F_{ML}(\theta) = \ln |\widehat{\Sigma}| + \text{tr}\,(S\widehat{\Sigma}^{-1}) - \ln |S| - (p+q)$

Where S and $\widehat{\Sigma}$ are the sample and model estimated variance and covariance matrices, respectively, and (p+q) is the number of observed variables involved in the model yielding (p+q)(p+q+1)/2 unique variances and co-variances.

The SEM path structure is shown in Fig. 3, which confirms the eight hypotheses raised. First of all, the positive relationship structure of both internal management quality (manifested on mission clarity, and

risk governance and culture) and the sensed external environmental conditions are supported (H1 is supported). As also stated in [39], mission clarity is crucial to success in effective strategic management, and what the SEM path in Fig. 3 revealed is, which contributes also to the extant literature, is that as the competitive environment becomes more challenging, the roles of mission clarity and core value communicated to the organizational members, and establishing risk governance system and cultures, become very important and should be aligned. This reflects the first Hypothesis H1. The SEM model fit test results are presented in Table V, with χ^2/s = 1.594, below the threshold of 5, and with p = 0.086 ≥ 0.05 (showing perfect absolute model fit) based on Maximum Livelihood (ML). Increment model fit indexes also conform to the requirements for increment model fit: Normative fit index (NFI) 0.987, RFI = 0.961, IFI = 0.995, TLI = 0.985, and CFI = 0.995, all closer to 1, together with the absolute fit RMSEA = 0.053 [40], [41].

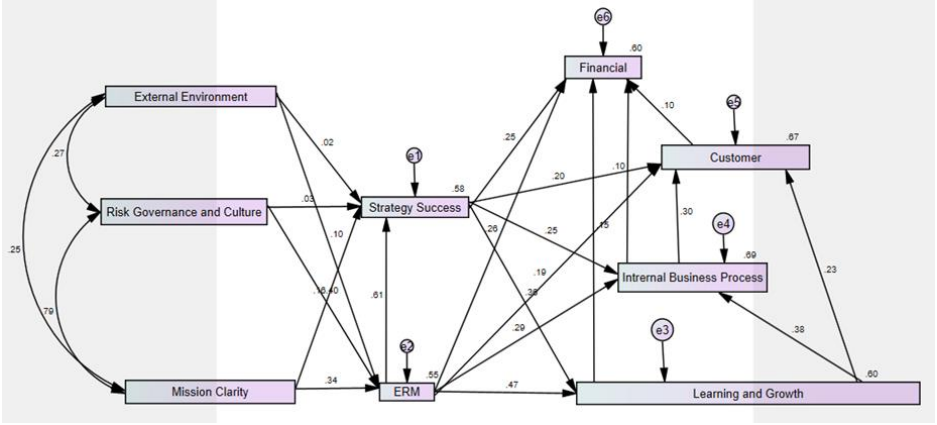

Fig. 3: The Structural Equation Model

The following Table V presents the SEM model fit-summary of the model parameters and indexes based on the fitting functions using Maximum Livelihood (ML).

Table V: Model Fit Statistics

Model Fit Summary					
CMIN					
Model	**NPAR**	**CMIN**	**DF**	**P**	**CMIN/DF**
Default model	42	19.127	12	.086	1.594
Saturated model	54	.000	0		
Independence model	18	1475.745	36	.000	40.993
Baseline Comparisons					
Model	**NFI**	**RFI**	**IFI**	**TLI**	**CFI**
	Delta1	**rho1**	**Delta2**	**rho2**	
Default model	.987	.961	.995	.985	.995
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000
RMSEA					
Model	**RMSEA**	**LO 90**	**HI 90**	**PCLOSE**	
Default model	.053	.000	.095	.414	
Independence model	.432	.414	.415	.000	

Hypothesis Testing: The hypothetical structures stated in H2 to H8 are supported by the path analysis structure of SEM analysis in **Fig. 3**. **Table V** provides only the significant path coefficient details of the Hypotheses H2 to H8. The SEM confirms that hotel performance is influenced and significantly mediated by enterprise risk management and strategy success in making use of internal management and external environmental conditions. Hypothesis H1 is evidenced in the significantly positive correlations outcome given in **Table III**. SEM in Fig. 3 also confirms the BSC structure, stating the significant role of learning and growth as the fundamental driving forces to provide the knowledge and insights to guide the development of internal business process and improves the values offered to customers. In doing so, financial performance is shown achieved, attributable to learning and growth, internal business process, customer performances, and most importantly, strategy success and ERM.

Table VI: Hypothesis Supporting Details

Hypotheses	Independent Variable	Dependent Variable	Beta	t	Sig	Result
H2	External Environment	Enterprise risk management	0.10	2.18	0.03	Support
H3	External Environment	Strategy success	0.02	0.49	0.62	Support
H4	Mission clarity	Enterprise risk management	0.34	4.52	0.00	Support
	Risk Governance and Culture		0.40	5.33	0.00	
H5	Mission clarity	Strategy success	0.16	2.12	0.04	Support
	Risk Governance and Culture		0.03	0.38	0.70	
H6	Enterprise risk management	Strategy success	0.61	9.12	0.00	Support
H7	Strategy success	BSC performance	0.43	8.58	0.00	Support
	Enterprise risk management		0.50	10.07	0.00	
H8	Learning and growth	Internal business process	0.38	6.22	0.00	Support
	Internal business process	Customer	0.30	4.17	0.00	
	Customer	Financial	0.10	1.38	0.17	

Conclusion: Strategy success of hotel will have more effectiveness when the hotel implements ERM that rationalizes based upon acknowledging the external environmental pressures, which serves as an urgency motivator, and clarity in the mission and the regulatory and aspirations environment. There are numerous important concluding insights drawn from this research, which manifest the domains of contributions, both theoretically and practically.

First, this research demonstrates the positive relationship between the perceived environmental threat level and the efforts level of enterprise risk management (ERM), which underpins a working of contingency based approach to ERM. While the current research projects that the ERM effort is contingent upon how the hotel management and teams perceive the environmental complexity and stresses, it is suggested the hotels should take a more proactive approach in ERM.

Second, there is a very significant positive relationship also shown in between the external environment and the internal organizational efforts in terms of putting the management efforts right, by means of mission clarity and risk governance and culture. Considering internal and external environment while ERM and strategy are implementing is very important, justifying an open system that rationalizes the mutual alignments and matching (both internal and external) in order to win, leading to both external and internal roles to influence both ERM and strategy success. Most importantly, as the competitive environment gets difficult or becomes more challenging, the roles of mission clarity and core value

communicated to the organizational members, and establishing risk governance system and cultures, become very important and should be aligned.

Third, this study indicates that ERM is a perfect mediator in leveraging up the efforts in mission clarity, risk governance and culture, and handling with the external environment for strategy success. The result of this research shows that employees who perceive higher level of threat of the environment, has higher level of mission clarity and risk governance and culture, tend to have better ERM practices in their job which further directly impact to the higher success of strategy of their hotels. In view of this, the hotels should allocate budgetary resources to provide training to employees and the management relating to ERM, as well as strategic management in a more holistic and measurable manner.

Fourth, performance of the hotels, in holistic balanced scorecard sense, is shown to be explained by both strategy success and the efforts of ERM. This matches with the definition of ERM as a significant part of the efforts to reduce uncertainty and possibility of unsuccessful strategy implementation. In other words, the effect of ERM practices not only impacts directly to hotel performance outcome but it also impacts to hotel performance indirectly by passing though the success of hotel strategy.

Fifth, this research provides a holistic view of performance in terms of four perspectives of BSC concept. In short, hotel performance is simultaneously demonstrated by the ability to fulfil the objectives in four respective perspectives (namely, learning and growth, internal business process, customer, and financial) and equally, each perspective is inter-supporting each other to yield expected financial performances. Organizational learning is important particularly when our aim is to survive at a rate not lowering than the rate of change of the environment [42].

Sixth, the BSC logics which states how learning and growth objectives and initiatives support achievement level and effort of internal business process, which in turn, drives customer-domain performance, and thus, financial performance, is empirically supported. Their interrelationships provide a balanced approach to ERM, and presents the organizational performance in more sustainable manner [43].

Implication: This study suggests several practical implications for hotel owners and managers to give considerable attention to ERM implementation to improve the success of strategy and hotel performance, and both the external and internal environment factors should be strategically incorporated and be supportive. The practical implications stated below are inferred and drawn from the outcomes of this research.

Hotel manager should clarify vision, mission and core value of hotel and communicates to every position to allow them to understand their duties, that it can contribute to hotel's goals. Hotel managers should establish risk governance and culture to create the awareness in organization. Every hotel should share risk information and communicate about the risk in every position.

Hotel manager should provide an overview of the alignments between ERM and strategy to the organization in order to make employees having a good cognition about their roles, both back and front offices.

Managers should clarify and communicate hotel strategies and obstacles that may affect to implement risk management and strategy to everyone in the organization, and provide a systematic commitment and investment. As it is reported also in [13], implementing ERM requires a significant investment by firms.

As effective ERM implementation is hardly straightforward [44], this research shows that educational background is important – Those with Bachelor degree significantly perceives higher on the constructs investigated in view of the ERM model. No significant differences are found across the different star-categories of hotel sector, which provides a practical utility sharing across the entire hotel sector, to use the ERM model suggested to benefit and enhance operating and financial performances. Hotels with more rooms and more employees also consider ERM at a higher level than the lower-room counterparts,

leading to better performances across the four BSC perspectives, which supports the findings of, for instance, [13] and [38], partly attributable to the complexity increase with room and employee numbers. Most importantly, there seems to be a lax when the hotel operations years increase – that is, the more years of hotel operations, the lower the efforts of the entire ERM model dynamics, spanning from both internal and external environment, to ERM and strategy success, and BSC performances, signifying a weakening of the so-called "dynamic capability" of the hotels to sense opportunities (the external environment), and seize them or formulate strategies to take advantages of them, while simultaneously shape threats. According to DC (Dynamic Capability) perspective, as reported in [45], firms need to continuously build, integrate, and reconfigure their skills and abilities to adapt to their important environment and sustain competitive advantage (p. 3).

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THE S-O-R MODEL IN ACTION FOR STUDYING HOSTEL CUSTOMER BEHAVIORS

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Abstract: Prior literature highlights very little of empirical and conceptual research involved in explaining and characterizing how the customers perceive of their experiences staying in the hostels. To fill in these gaps, this research adapts a widely acknowledged S-O-R paradigm, which studies the mediating roles of hostel internal image and customer value proposition to leverage the stimulation drivers for influences on customer satisfaction, loyalty and their social media engagement. Social spaces and themes are particularly emphasized as they are conceived as unique features of hostels. A rich spectrum of demographics is considered, which leads to a rich set of implications to offer to the hostel management, and also offers insights theoretically. Maximum livelihood (ML) function is used in the structural equation model (SEM) fitness tests, and both increment and absolute fits are demonstrated, which is evidenced by RMSEA at 0.05, χ^2/df = 1.629 below the upper threshold of 5, at p-value ≥ .05 (indicating model fit supported), NFI = 0.99, RFI = 0.966, IFI = 0.996, TLI = 0.987, CFI = 0.996. A very significant theoretical finding, which adds to the extant literature, is that loyal customers are important mediator to induce the customers who stayed at the hostels to share their experiences in social media. The statistical findings, hypothetical supports, and theoretical and practical contributions are made possible based on 250 valid returned surveys from the hostel guests. Numerous important practical implications are discussed.

Keywords: Brand Image, Hostel, Social Media Engagement, Stimuli-Organism-Response.

Introduction: Tourism is a significant sector contributing to over 17% of Thai national GDP, estimated to THB 2.5 trillion for the domestic economy, which benefits various stakeholders i.e. the tourism and hospitality value chains, and the manufacturing of products that cater to the needs of the tourists [1] Along with tourism is the increasing of accommodation demand. Thailand has seen the number of foreign tourists jumped from 15.9 million in 2010 to 38.3 million in 2018, and that also causes the hostel sector to experience skyrocketing growth of 32% in bed inventory, amounting to 63,632 beds in 1,766 properties across Southeast Asia, and with the most numbers of hostel beds in Thailand. Specifically, Thailand has a 42% share of the hostel industry in Southeast Asia [2]. Hostel sector is generally acknowledged to serve the low-cost segments whereby the travelers prefer to save traveling cost so that their trip journeys can be extended longer [3].

There are actually some unique features that hostels offer, and are significantly different from what the hotels offer, and these problems are negligibly addressed and reported in the extant literature. For instance, [4] articulate and stress that "social atmosphere space" is something logically important for the hostel sector but it is lacking of empirical test. Reference [4] illustrate, for instance, that "Associating with a wide array of global travelers is part of the assortment of products and experience of hosteling. Stories are shared, photographs exchanged, recommendations made for other voyage destinations, and in some cases, romances are kindled" (p. 218). With this friendship-making motivation, social engagement is reckoned as an important motivator and something the hostel sector should actively stimulate. Beside social atmosphere and spaces, there are other aspects such as customer experiences towards the services of the hostel staying, and in relation to the perceived images of hostel in the eyes of the customers, and the function of social-media blogs, are also not easily found in the extant literature associated with Sciencedirect.com and Emerald databases.

Meanwhile, a desktop-based SWOT analysis provides a sketch of both internal and external environmental landscape of the hostel sector:

- Strength – In general, the hostel industry gains the advantage with respect to other modes of accommodation in areas such as budget or low-price accommodation. [1] states that "Thailand

benefits in particular from its inexpensive accommodation options, natural resources, and tourism infrastructure and these strengths help to underpin the competitiveness of the Thai tourism sector". Furthermore, hostel has the "social atmosphere" theme, which the traditional hospitality sector like the hotels are not offering. According to [3], about 19% of the customers indicate that they are attracted to hostels on offers with free social experience over those that do not. Thus, hostel has the value aspect of competitive advantage for certain price-sensitive or social-preference types of customer segments.

- Weakness – Thailand's skilled workforces are at low proportion when compared to other ASEAN countries, and this further puts the pressure for the hostel sector to recruit skillful employees. Though high skills are not needed in the hostel industry, but the employees must be equipped with empathic and service-oriented attitude, especially hostel sector is "heterogeneity" in nature, in that "no two customers are precisely alike" [5] (p.20), which puts pressure for employees to need to be able to react professionally to various customer needs.
- Opportunity – The National Economic and Social Development states that at the beginning of 2019, tourism industry performed impressively at 18.4% of Thai GDP. With this huge share, it shows the increasing demand for accommodation [3].
- Threat – Threats of potential new entrants are high because hostel businesses is low investment in nature when compared to hotel alternatives, and regulation is not complex, and is a lot easy to find the location.

Judging by the significant weightage of hostels played in the accommodation industry and the lack of empirical and conceptual research, an urgent research is needed. A SWOT landscape sheds light towards the practical function of adapting a Stimulus-Organism-Response (S-O-R) paradigm, such as by considering the social factor, services, and value perceptions. Thus, the following research objective is targeted:

> *The purpose of the research is to conceptualize and statistically validate a proper model to be able to describe the customers' behavioral dynamics of their experiences staying in hostels in both Chiang Rai and Chiang Mai. Specifically, this research is designed to investigate the effects of stimuli (S), consisting of the factors that the hostel should emphasize, on the customers' internal or organismic states (O), which further contributes to customer loyalty and the disposition to engage and share their staying experiences on social media.*

Literature Review: As stated in the purpose statement, S-O-R (Stimulus-Organism-Response) model is adapted, which serves both theoretical and practical purposes. S-O-R is the seminal conceptualization of [6] Practically, the model is simple, and by realizing what factors are important to please the actual and emotional needs of customers [7], i.e. novelty, or things critically important for hostel context, the hostel managements can suggest what they should emphasize in order to create favorable responses of the customers. Theoretically, the empirically validated research provides a valid mechanism to explain hostel customer behaviors with valid explanatory power. The design and implementation of the S-O-R mechanisms adapt the insights derived from the environmental psychology, which offers an exploratory perspective on customer behavior with regard to hostel environmental effect [7]. Thus, S-O-R is a loyalty formation process. The response can be conatively (intentional return to use the hostel service in the next visit), cognitively (thinking that hostel offers better services when compared to others), affectively (a deeper sense of affective response), and action loyalty (actual repurchase) [8] In short, the stimulating qualities and factors will cause customers to approach the offer or avoid the offer in the next occasion.

The S-O-R, which puts the internal or organistic states of the customers as the mediator, illuminates an example of instrumental or operant conditioning creatively, in that customers respond positively through being rewarded for their behaviors; that is, the customers are satisfied with their choice selecting the hostel in the first place. In short, satisfied customers reinforce their choice behavior (loyalty) and unsatisfied customers lead to turning away. The following hypothesis reflects the instrumental or the operant conditioning aspect of the S-O-R, namely:

H: Customer satisfaction positively influences customer loyalty.

For in-depth discussion on instrumental or operant conditioning, one is suggested to review [9]. In general, we define satisfaction as the customer's total assessment of their experiences with the hostel, adapting [10]. For loyalty, it is referred as a "deeply held commitment to rebuy or re-patronize a preferred product or service consistently in the future" [11] (p. 34), so the hostel can earn a share of the customer's wallet.

S-O-R model can also be understood by adapting computer analogy or metaphor [12], which acknowledges processing the information or messages received from how the hostels intend or attempt to stimulate the emotional and behavioral responses of the customers. In this way, "O" should depict the information-processing output, and of relevancy is how customers perceive of the values received (CVP, Customer Value Proposition), the overall assessment of how satisfied they are with the services, and the images formed. CVP reflects the perceptions of the hostel customers with respect to the values the hostel proposed, which according to some preferential theory and the nature of active wants, the nature of CVP could of economic reasons, functional reasons, emotional reasons, or/and social reasons [13]. Functional value is one of the topics in the early work of consumer behavioral study, and explains the property of a good or service that is capable to satisfy customer needs [14]. By focusing on the cognitive organism, apart from the satisfactory state of the customers, it reinforces that the stimuli are processed both cognitively and affectively for the changed response to occur. Nevertheless, based on [15], [16], there is the possibility that the affective evaluation of stimuli, which results in customer satisfaction, can occur independently of cognitive processes which intercept and process the information in terms of CVP and brand image formation. Thus, two additional hypotheses take the shape in the S-O-R context:
H: In a hostel context, the stimuli, which describes the service operations, the social engagement environment, and the external brand image perceived from the social media, do positively influence both CVP and hostel brand perception.
H: Both CVP and the hostel brand perception (the internally formed through customer experiences) positively influence customer satisfaction.

The conceptual factor, exemplified by the external brand image explicitly formed from social media, extends the inactiveness of customers to activeness [17], which treats the customers as "information processor" [18], taking into consideration of the environmental and social stimuli as information inputs aiding internal decision making of the customers [19]. The theoretical support for inclusion of external brand image of hostel is also indicated in Table I. The inclusion of hostel brand perception signifies the role played by customer experiences and the creation of memory of the unique experiences of the hostel accommodation stay. Image formed is important as it directly contributes to enhancing brand recognition, leading to brand loyalty [20], [21]. In addition, the externally sourced brand image from the social media has the ability to reduce risk perception of the customers [22], particularly the purchase provides no avenue for product and service testing.

Table I: The Early S-O-R and Modern Theory of S-O-R

Early S-O-R	Modern Theory of S-O-R
Suggests a linear relationship of S-O-R Taking an inactive organism [12].	Acknowledges active organism, incorporating the past experiences of the customers to influence information-processing of stimuli; thus, in a way, information processing is both stimulus-driven and concept driven [17]. Hierarchical [23], [24] More inclusive of other theories i.e. theory of planned behavior [25].

In the above stated hypotheses, apart from the hostel operations quality and pricing, which is within the control and commitment of the hostel, the social engagement environment is equally important, particularly in the hostel context.

Two ultimate responses are considered in this research, namely customer loyalty and in terms of social media engagement. Customer loyalty is an important target of the hostel management as it indicates the success of the hostel operations. Thus, researchers have attempted to elucidate the factors that influence loyalty [26], and this research exploits the S-O-R paradigm [6] to provide a conceptualization platform to help researchers explain and present evidence pertaining to locating the effective stimulating effects on hostel customers' internal states [27]. Within the Social Exchange Theory (SET), customer behaviors are related to, inter-dependent on, and contingent upon the actions of another person [28], through social engagement at the social compound and facility provided by the hostel. In today's social media-era [29], achieving customer engagement with social media has become a concept of increased relevance in recent marketing literature and as a novel approach to translate and implement customer value proposition [30] (p. 59). Reference [37] define social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of user-generated content" (p. 65). It was demonstrated and empirically tested that when customers are more loyal, they are more attuned to participate actively in social media, such as telling the stories, which serves empathetic and agentic role to tell what they experience to others so that others would not fail to anticipate the unexpected [29]. Thus, without considering social media engagement, in today's social media-era, it would make the study of consumer behaviors incomplete [32].

The S-O-R model that has been articulated so far can provide important insights to the hostel management and the researchers to help them understand the mental structures and processes that mediate between stimulus and response [33]. The theoretical S-O-R model, which summarizes and integrates the hypotheses stated previously, is concluded in Fig, 1, and the hypotheses are presented now sequentially as follows:

H1: There is a positive interrelationship between the various aspects of the stimuli, namely service operations objectives reflected by the service quality and cost perception, the social engagement environment, and the external brand perception.

H2: Stimuli positively influences the organism. The organism is consisted of CVP, hostel brand perception (named as the internal brand image, formed through customer experiences, and not extracted from the external media), and customer satisfaction.

H3: CVP positively influences hostel brand (the internal).

H4: Both CVP and the hostel brand (the internal) positively influence customer satisfaction.

H5: Both customer satisfaction and CVP can significantly explain the variance of customer loyalty.

H6: CVP positively influences social media engagement.

H7: Customer loyalty positively influences social media engagement.

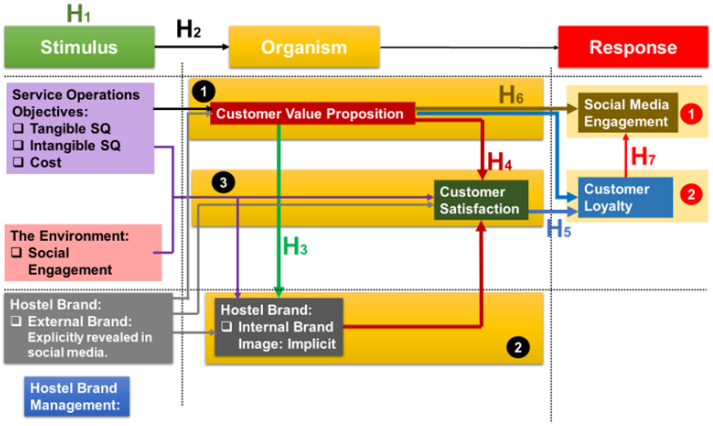

Fig. 1: The Theoretical S-O-R Model Proposed to Study Hostel

Research Method: Samples and Data Collection**:** This research targeted the city-bound hostels, located in Chiang Mai and Chiang Rai as shown in Table II. The samples targeted city-bound hostels which obtained the name lists from website Hostelworld.com. Table II shows 33 available hostels in Chiang Rai and 93 hostels in Chiang Mai, discounting away the closed hostels during low season at the time of data collection at the time of data collection from September to October 2019. Nevertheless, the number of hostels who were willing to participate is 12 in Chiang Rai and 22 in Chiang Mai. Having what we have of the 34 hostels, 770 questionnaires were distributed. To attract the customers to participate, we provided them with a small token of cultural gift which costed about 12,320 Baht, and the gifts together with the questionnaires were managed by the hostel managers. In the end of the 2-month of data collection, we collected 260 responses, with 10 were not counted due to many missing responses: that is, 250 valid responses were used in the multivariate statistical analysis, with the response rate at 32%. In non- self-administered sample collection situation, typical response rates vary from as low as 30% [34] to 80% [35].

Table II: Targeted Population and Sampling

Targeted population				
Targeted area	ChiangRai	ChiangMai		
Existing hostel	43	113		
Closed Hostel during low season	10	20		
Available Hostel	33	93		
Sampling/Participated				
Hostels willing to participate	12	22		
Distributed questionnaires	270	500		
Collected questionnaires	70	190		
Total			=	260
Valid questionnaires			=	250
Invalid questionnaires			=	10

Measurement Instrument**:** The measurement instrument is designed by going to a rigorous process to ensure quality in the design. Quality of measurement instrument is aimed at delivering the validity and reliability of the constructs, and to do so, the definitions that are widely aligned to and acknowledged in the extant literature, are strictly followed, with respect to the hostel contextual environment, so that each wording and statement makes sense from the views of the hostel managers and the customers. In addition, in the pilot-testing process, we approached two subject experts: one with sufficient knowledge of research methodology, particularly quantitative based, and another with specialization in service marketing and hospitality. The reliability measures also include the use of statements in language and in ways that can easily be understood instantly, based on the memory-recalling or the fresh experiences of the customers.

Two parts are in the survey. The first part requested the hostel customers to provide their demographic profiles, which is very important and has provided a huge spectrum of practical insights to offer to the hostel management, and the practical implications this research offers. The demographic variables are comprehensive, including gender, nationality, age, occupation, marital, booking in advance, duration of stay, room type, daily rate, frequency of stay, character or trait of the customers, unique theme, low-cost and independent travel, alternative attitude of staying in hotel instead, social media reliance, purpose of trip, accompaniment, and travel plan. The statistical details related to them are given in the "Result and Discussion" section. Part 2 surveys the constructs involved, which has a total of 48 items. The questionnaire items are discussed, along with evidences to support validity and reliability requirements, in the "Result and Discussion" section.

Statistical Testing: Hypotheses testing and the detailed spectrum of statistical analysis were completed using both AMOS-based SEM (Structural Equation Modeling) analysis and SPSS-based statistical

analysis. Methods used to assist the assessment of validity and reliability involve using factor reduction, correlations, and reliability checks. Minimum reliability threshold is targeted at 0.70 [36]. The SEM fitness test criteria are comprehensively discussed in [37].

Result and Discussion: Descriptive profiles: A valid 250 responses of the hostel guests were used for the statistical analysis. The hostel guests stayed in the city-bounded hostels in both Chiang Mai and Chiang Rai. Males and female customers are quite equally distributed, with female guests at 59.6%. Among them, European at 46.8%, Thai at 16.8% and North American at 12.8%. Age wise, 25-34 years old at 44%, and 26.4% of the respondents are students. Furthermore, 84.8 % are single, and among them, 66.4% booked 1-2 weeks before checked into the hostel, 36.8% stays for three nights to a week, chose mixed dorm at 41.6%, and 61.6% spent 100 to 400 Baht per bed per night, and 72.4% checked into the hostel for the first time. Interestingly, 72.8% of the respondents are extrovert in personality trait, connoting a skewed preference towards social interactions. Among the respondents, 54% purported the trip for travelling, accompanied by friends at 62 %, and their travel plans are flexible, at 80.8%. Another important demographic variable is that 89.6% consider themselves as low-cost and independent travelers, relying on social media for decision making at 86%, and 63.6% responded that they would also choose hotel instead of hostel if price is comparable.

Result of Validity, Reliability Assessments and Measurement Instrument: Prior to SEM model fitness tests, the measurement instrument must be properly assessed. Factor loading, as shown in Table III, proves of exceeding the 0.7 threshold [38], with reliability index determined by Cronbach Alpha (> 0.7) [39]. The factor reduction examination indicates the sampling adequacy at Kaiser-Meyer-Olkin (KMO) higher than 0.60. Thus, together with the average variance extracted (AVE) > 0.5, on unitary dimension based on the factor reduction (exploratory factor analysis), KMO > 0.6, factor loading > 0.6-0.70 threshold, the convergent validity is established robustly. The reliability and fundamental convergent validity outcomes, including the questionnaire items, are given in Table III.

Table III: Measurement Instrument

Construct	Items	Cronbach's Alpha	Factor loading	Mean	Standard deviation
Cost	The hostel provides special offers.	0.70	0.73	3.78	0.93
	The hostel price is cheap, which can save cost of travelling.		0.81	4.03	0.93
	The hostel has well-informed price prior to the purchasing with no additional charges.		0.82	4.29	0.89
Reliability	The hostel service is considered very reliable.	0.91	0.92	4.24	0.90
	The hostel reservation system is reliable.		0.92	4.30	0.88
	Staffs are able to accurately answer the customer questions.		0.92	4.40	0.90
Responsive	Hostel's check-in and check-out procedures are fast and efficient.	0.82	0.88	4.34	0.94
	Staffs of the hostel are never too busy to respond to my requests.		0.87	4.25	0.96
	Hostel quickly responses to customers upon request, such as through email or social media.		0.83	4.16	0.99
Assurance	Staffs understand my requests and able to respond appropriately.	0.90	0.94	4.26	0.94
	Staffs are able to provide city information		0.91	4.32	0.87

	and recommend attractive places.				
	Staffs are knowledgeable of the services offered by the hostel		0.90	4.35	0.91
Empathy	Staffs always provide the service with smile and kindness.	0.89	0.90	4.48	0.84
	Staffs look after customer like a family.		0.92	4.22	0.95
	Hostel is willing to offer additional services or assistance.		0.90	4.26	0.89
Tangible	The hostel has a variety of facilities i.e. laundries, Wi-Fi to cater for our daily needs.	0.89	0.91	4.21	0.96
	Rooms and bathrooms are clean.		0.92	4.23	0.97
	The hostel has high security which has security personnel, fire alarm-system and CCTV.		0.89	3.92	1.06
Social engagement	Hostel provides social spaces, whereby customers can socialize among each other and do some activities together such as pools, game machine or board game.	0.81	0.84	3.80	1.15
	Hostel provides social activities, such as cooking class, yoga etc.		0.81	3.16	1.23
	Hostel allows you to meet up a new friend, which support you to better understand cross-cultural differences and similarities.		0.91	3.73	1.13
Functional value	The hostel makes we relaxed from the quality of service.	0.70	0.86	4.19	0.91
	The hostel room is very quiet and gives comfortable sleep.		0.79	3.98	0.97
	The hostel location is convenient which is close to the city.		0.80	4.34	0.77
Emotional value	The time spent at the hostel is truly enjoyable	0.93	0.94	4.12	0.96
	The atmosphere of the hostel makes my staying with a sense of joy.		0.96	4.09	0.99
	I feel like being at home while staying at the hostel		0.91	3.83	1.08
Economic value	The hostel provides good accommodation that is worth its price.	0.84	0.85	4.26	0.87
	The food and beverages served at the hostel are worth of its price.		0.85	3.96	1.09
	The customers can use all facilities and access the hostel services which are worth.		0.92	4.17	0.94
Social value	Understand different multi-cultures better.	0.93	0.94	3.76	1.02
	Enhance empathy towards other culture.		0.95	3.80	1.00
	Improve my interpersonal relations (with others).		0.93	3.80	1.01
External brand image	This hostel has media advertising on online social media such as reviews from Trip Advisor, Travel Bloggers, Pan tip etc.	0.89	0.90	4.10	0.94
	From the external sources, this hostel is attractive.		0.90	4.15	0.98

	From the external sources, this hostel is responsive to consumers.		0.92	4.28	0.87
Internal brand image	From my experience, this hostel is well managed.	0.93	0.92	4.22	0.96
	From my experience, this hostel has good employees.		0.95	4.36	0.90
	From my experience, this hostel is customer focused.		0.95	4.30	0.94
Customer satisfaction	Overall, this hostel fulfils many important needs e.g. Beds, Wi-Fi.	0.93	0.92	4.32	0.86
	Staying at this hostel is the right choice for me.		0.96	4.27	0.95
	Overall, I am really satisfied with this hostel.		0.93	4.31	0.94
Customer loyalty	I am likely to return to this hostel in the future if there is opportunity arises in the future.	0.90	0.92	4.04	1.15
	I feel emotionally attached to this hostel.		0.89	3.47	1.26
	I will recommend this hostel to my relatives and friends.		0.93	4.07	1.14
Social media engagement	I would share the positive things that I experience at this hostel in my social media.	0.83	0.91	3.45	1.38
	I would post pictures that I experience at this hostel in my social media.		0.92	3.24	1.40
	I would provide good rating to available platforms, such as TripAdvisor, Agoda, etc. about this hostel.		0.75	4.00	1.14

Also, as shown in Table IV, divergent constructs are robustly secured, in which the square root of TVE (Total Variance Explained) indicates of larger values when compared to the cross-correlations coefficients.

Table IV (a): Mean, Convergent and Divergent Validity, and Reliability

	Construct															
	Cost	Reliability	Responsive	Assurance	Empathy	Tangible	Social Engagemen	Functional Value	Emotional Value	Economic Value	Social Value	External Image	Internal Image	Satisfaction	Loyalty	Social Media Engagemen t
V1	1															
V2	0.68	1														
V3	0.62	0.8	1													
V4	0.55	0.73	0.73	1												
V5	0.55	0.7	0.68	0.72	1											
V6	0.46	0.7	0.67	0.62	0.65	1										
V7	0.31	0.4	0.36	0.35	0.39	0.58	1									
V8	0.49	0.72	0.67	0.66	0.59	0.68	0.54	1								
V9	0.47	0.63	0.61	0.54	0.55	0.74	0.58	0.75	1							
V10	0.57	0.71	0.63	0.59	0.63	0.69	0.47	0.68	0.66	1						
V11	0.38	0.4	0.42	0.34	0.44	0.55	0.66	0.56	0.64	0.56	1					
V12	0.5	0.6	0.65	0.63	0.55	0.66	0.49	0.67	0.69	0.63	0.5	1				
V13	0.58	0.77	0.72	0.67	0.71	0.7	0.43	0.69	0.67	0.69	0.47	0.65	1			
V14	0.51	0.69	0.69	0.6	0.61	0.77	0.56	0.74	0.77	0.68	0.55	0.74	0.78	1		
V15	0.43	0.52	0.52	0.46	0.53	0.65	0.55	0.67	0.8	0.56	0.59	0.62	0.66	0.78	1	
V16	0.32	0.34	0.33	0.33	0.36	0.47	0.46	0.5	0.62	0.45	0.48	0.5	0.48	0.58	0.73	1

V1 = Cost, V2= Reliability, V3= Responsive, V4= Assurance, V5= Empathy, V6=Tangible, V7= Social Engagement, V8= Functional Value, V9= Economic Value, V10= Emotional Value, V11= Social Value, V12= External Image, V13= Internal Image, V14= Customer Satisfaction, V15= Customer Loyalty, V16= Social Media Engagement

Table IV (b): Mean, Convergent and Divergent Validity, and Reliability

	Mean	Std. Dev.	Alpha	KMO	TVE	$\sqrt{TVE}$
Cost	4.03	0.73	0.70	0.65	0.62	0.79
Reliability	4.32	0.82	0.91	0.76	0.84	0.92
Responsive	4.25	0.83	0.82	0.71	0.74	0.86
Assurance	4.31	0.83	0.90	0.74	0.84	0.92
Empathy	4.32	0.81	0.89	0.74	0.82	0.91
Tangible	4.12	0.90	0.89	0.74	0.82	0.90
Social Engagement	3.56	1.00	0.81	0.67	0.73	0.85
Functional Value	4.17	0.72	0.70	0.67	0.66	0.81
Emotional Value	4.01	0.94	0.93	0.74	0.88	0.94
Economic Value	4.13	0.85	0.84	0.68	0.76	0.87
Social Value	3.79	0.95	0.93	0.76	0.88	0.94
External Image	4.29	0.88	0.89	0.75	0.82	0.91
Internal Image	4.23	0.78	0.93	0.76	0.88	0.94
Satisfaction	4.30	0.86	0.93	0.72	0.87	0.93
Loyalty	3.86	1.08	0.90	0.74	0.84	0.91
Social Media Engagement	3.56	1.13	0.83	0.65	0.74	0.86
Correlations Coefficients are significant at the 0.01 level (2-tailed) **						
Criterion for divergent: The diagonal must be higher than the cross-correlations coefficients.						

Comparative Study: The color-coded cells of Table V highlight the areas of significant differences, revealed by means of either analysis of variance (ANOVA) or t-test. The following illuminates the areas of significant differences:

- Male in general has means value more than the female, but are not to the level of statistical significance.
- Nationality wise, the Asian groups show significantly lower perceptual level on hostel service qualities, in aspects of reliability, responsiveness and tangible, as well as social engagement, leading to lower CVP, especially significant on the economic value. The external image projected to the Asian group is also relatively lower than the other nationalities.
- On the occupational aspect, social engagement of the student groups is the lowest among the other, while the business owner has the highest level. The similar trend is also shown in the "response" side indicated in social media engagement, which explains the dispositional tendency to post pictures experienced at the hostel to social media platform.
- The single-group perceives significantly higher that the hostel price is cheap, and that the hostel has well-informed price, which signifies a higher level of price-sensitivity, and also shows higher perceptions on other aspects of service qualities, particularly with respect to "responsiveness". The single-group perceives favorable hostel image, of both received from the social media and their own experiences.
- Those booked the hostel in the shortest advance, within 1-2 weeks, show higher level of perceptual agreements with all the constructs studied, and thus, the model dynamics should be strategically maintained and promoted for this group of customers. The similar trend is exhibited also for those staying one-night as compared to longer-duration stays, partly attributable to the exhaustion of the experiences with the services provided by the hostel. The hostels would need to be more innovative and service conscious in order to service the groups of longer-duration stays.

- The same-sex group has shown favorable perceptions on all constructs studied, and the private-room customers think the other ways. Thus, it is important the hostel owners start to identify them for further investment in order to stimulate their experiences in more active way.
- Price wise, 100-400 Baht per-bed day shows high level perceptual responses on all the constructs studied, but gradually wear off when daily rates increase. Thus, it is important the hostels pay a close attention to how their customers perceive pricing and the relevancies of other factors in order to yield at an optimal level.
- First-timers are shown to reflect higher level of emotional value received, leading to also higher loyalty value. The hostels should actively target them and exploit their emotional characteristics.
- Hotels of unique themes should also be stressed actively as they can significantly induce higher level of perceptual experiences in the stimulation, organism and response aspects, which is important in driving up the performance of the hostel.
- On average, the non "low-cost and independent travel" group shows higher level of perceptions of the constructs studied, particularly with responsiveness and assurance, implying higher level of emphases the service providers to respond quickly in professional manner, which reflects the higher level of price they are willing to pay.
- Reading the signal from the "Alternative attitude (Hotel instead of Hostel)", it indicates the existence of stickiness – that is, there is a group of customers preferring hostels to hotels.
- Although on average, the customers who rely on social media show higher level of perceptions on the constructs studied, but the only significant one is that of "reliability", partly they have glanced across the social media, and their choices signify a better choice. This is an important message which has been not easily revealed in the extant publications.
- No significant differences are found on the different purposive groups, i.e. for travel, holiday, business, visiting friends, and MICE, which eases up the budgetary burdens for this segmentation need.
- Those who travel alone have higher level of perceptions of the constructs studied, when compared to staying with friends. The hostels should actively aim to promote more active experiences for shared partnership situations.
- Those with relatively fixed travel plan are significantly more loyal and tend to engage socially in sharing the experiences of the hostel with others on social media, and the hostel should actively promote this group and embark them as brand ambassadorship.

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Table V: General Data Profile, Descriptive and Cross-Comparative Analysis

Description		Frequency	Percentage	Cost	Reliability	Responsive	Assurance	Empathy	Tangible	Intangible	Service Quality	Social Engagement	Functional Value	Emotional Value	Economic Value	Social Value	CVP	External Image	Internal Image	Image	Satisfaction	Loyalty	Social Media Engagement
Gender	Female	149	59.6	4.05	4.26	4.21	4.23	4.29	4.06	4.25	4.21	3.48	4.13	3.92	4.06	3.66	3.94	4.11	4.27	4.19	4.29	3.79	3.57
	Male	98	39.2	4.01	4.40	4.30	4.45	4.36	4.19	4.38	4.34	3.71	4.25	4.13	4.23	3.98	4.15	4.28	4.34	4.31	4.34	3.98	3.58
	Other	3	1.2	3.78	4.45	4.56	4.00	4.33	4.56	4.33	4.38	2.89	3.55	4.44	4.56	4.11	4.17	4.00	4.11	4.06	3.78	3.55	2.78
	Sig.															0.03							
Nationality	Thai	42	16.8	3.91	4.08	4.06	4.20	4.41	4.17	4.19	4.18	3.71	4.25	4.13	4.18	3.89	4.11	4.18	4.25	4.21	4.40	4.06	3.91
	European	117	46.8	4.11	4.40	4.29	4.38	4.38	4.07	4.36	4.30	3.49	4.10	3.94	4.13	3.77	3.99	4.23	4.35	4.29	4.25	3.79	3.37
	Asian	35	14.0	3.96	4.08	4.11	4.06	3.93	3.80	4.05	4.00	3.21	4.01	3.90	3.76	3.47	3.78	3.78	3.98	3.88	4.09	3.88	3.74
	North American	32	12.8	3.89	4.31	4.27	4.37	4.26	4.27	4.30	4.30	3.79	4.28	4.15	4.19	4.03	4.16	4.33	4.35	4.34	4.34	3.84	3.66
	Other	24	9.6	4.18	4.69	4.54	4.49	4.50	4.51	4.56	4.55	3.87	4.47	4.17	4.53	3.82	4.25	4.26	4.46	4.36	4.64	3.84	3.47
	Sig.				0.01	0.03			0.03			0.04			0.02			0.05					
Age: year Old	Under 18	1	0.4	4.33	4.67	5.00	4.67	5.00	5.00	4.83	4.87	4.67	4.00	4.67	5.00	4.33	4.50	4.33	4.67	4.50	4.33	4.33	2.33
	18-24	98	39.2	4.08	4.23	4.20	4.18	4.27	3.96	4.22	4.17	3.50	4.04	3.96	4.10	3.77	3.97	4.07	4.20	4.13	4.18	3.75	3.31
	25-34	110	44.0	4.02	4.36	4.35	4.41	4.35	4.17	4.37	4.33	3.63	4.27	4.04	4.22	3.84	4.09	4.29	4.39	4.34	4.36	3.88	3.66
	35-54	38	15.2	3.87	4.36	4.04	4.30	4.32	4.32	4.25	4.27	3.48	4.25	4.10	3.96	3.77	4.02	4.11	4.22	4.16	4.41	4.12	3.96
	Over 55	3	1.2	4.89	4.89	4.67	5.00	4.67	4.56	4.81	4.75	3.78	3.67	3.44	4.00	2.78	3.47	4.22	4.56	4.39	4.44	3.22	3.55
	Sig.																						0.02
Occupation:	Student	66	26.4	4.13	4.32	4.30	4.26	4.32	4.06	4.30	4.25	3.33	3.96	3.93	4.15	3.69	3.93	4.07	4.20	4.14	4.16	3.75	3.19
	Corporate	56	22.4	4.02	4.32	4.30	4.40	4.27	4.00	4.32	4.26	3.51	4.27	4.00	3.95	3.58	3.95	4.18	4.44	4.31	4.36	3.94	3.71
	Government	15	6.0	3.71	3.75	3.62	3.82	4.15	4.02	3.84	3.87	3.73	3.89	3.87	3.98	3.71	3.86	4.11	4.00	4.05	4.02	3.87	3.87
	Business owner	25	10.0	3.97	4.27	4.17	4.48	4.48	4.49	4.35	4.38	4.16	4.29	4.28	4.36	4.17	4.28	4.35	4.21	4.28	4.47	4.24	4.09
	Freelance / Self-employed	46	18.4	4.01	4.35	4.38	4.25	4.26	4.01	4.31	4.25	3.41	4.20	4.04	4.02	3.76	4.01	4.09	4.28	4.18	4.33	3.79	3.56
	Unemployed	26	10.4	4.17	4.44	4.24	4.68	4.50	4.21	4.47	4.41	3.60	4.26	3.79	4.37	3.92	4.09	4.36	4.35	4.35	4.37	3.63	3.33
	Other	16	6.4	3.94	4.58	4.19	4.02	4.27	4.46	4.27	4.30	4.02	4.50	4.38	4.44	4.23	4.39	4.36	4.50	4.43	4.50	4.06	3.83
	Sig.						0.02					0.01	0.04										0.01

Description		Frequency	Percentage	Cost	Reliability	Responsive	Assurance	Empathy	Tangible	Intangible	Service Quality	Social Engagement	Functional Value	Emotional Value	Economic Value	Social Value	CVP	External Image	Internal Image	Image	Satisfaction	Loyalty	Social Media Engagement
Marital	Single	212	84.8	4.09	4.35	4.30	4.35	4.34	4.10	4.34	4.29	3.59	4.20	4.04	4.15	3.79	4.04	4.24	4.33	4.28	4.34	3.90	3.56
	Married	33	13.2	3.74	4.13	3.88	4.07	4.21	4.22	4.07	4.10	3.50	4.00	3.83	4.03	3.82	3.92	3.80	4.02	3.91	4.12	3.72	3.58
	Divorced	5	2.0	3.60	4.13	4.47	4.40	4.07	4.33	4.27	4.28	3.07	4.07	4.07	4.00	3.60	3.93	4.13	4.40	4.27	4.00	3.27	3.67
	Sig. (2-tailed)			0.01		0.02												0.02		0.04			
Booking in Advance	within 1 -2 w.	166	66.4	4.14	4.44	4.30	4.36	4.42	4.19	4.38	4.34	3.70	4.27	4.11	4.25	3.96	4.15	4.23	4.31	4.27	4.38	3.96	3.59
	2 w. – 1 m.	49	19.6	3.76	4.02	4.05	4.10	4.01	3.99	4.04	4.03	3.29	3.84	3.71	3.92	3.53	3.75	4.00	4.21	4.11	4.07	3.52	3.41
	Months ahead	35	14.0	3.92	4.12	4.29	4.40	4.29	3.97	4.28	4.21	3.30	4.18	3.96	3.89	3.35	3.85	4.15	4.31	4.23	4.25	3.87	3.64
	Sig. (2-tailed)			0.00	0.00			0.01		0.02	0.03	0.01	0.00	0.03	0.01	0.00	0.00					0.04	
Duration of Staying	1 night	38	15.2	4.34	4.59	4.55	4.61	4.55	4.48	4.58	4.56	3.81	4.42	4.21	4.36	3.60	4.15	4.47	4.54	4.50	4.58	4.14	3.83
	2 nights	63	25.2	3.90	4.05	4.03	4.06	4.24	4.01	4.10	4.08	3.66	4.05	3.96	4.03	3.88	3.98	4.21	4.15	4.18	4.22	3.83	3.66
	3 nights	29	11.6	4.16	4.23	4.15	4.33	4.40	4.15	4.28	4.25	3.88	4.00	4.00	4.22	4.02	4.06	3.97	4.31	4.14	4.24	3.98	3.65
	3 nights – 1 w.	92	36.8	4.05	4.46	4.27	4.31	4.26	3.99	4.33	4.26	3.38	4.20	3.95	4.12	3.79	4.02	4.11	4.28	4.20	4.26	3.73	3.31
	1-4 w.	22	8.8	3.73	4.20	4.29	4.46	4.21	4.17	4.29	4.26	3.36	4.27	4.00	4.01	3.42	3.93	4.03	4.26	4.14	4.33	3.95	3.62
	More than 1 m.	6	2.4	3.67	4.00	4.67	4.45	4.50	4.61	4.40	4.44	2.95	3.83	4.33	4.00	4.17	4.08	4.50	4.39	4.45	4.28	3.61	3.94
	Sig. (2-tailed)			0.01	0.01	0.04	0.04		0.05			0.03											
Room Type	Same sex	22	8.8	4.35	4.46	4.44	4.43	4.62	4.47	4.48	4.48	3.79	4.41	4.35	4.44	3.99	4.30	4.39	4.70	4.55	4.71	4.41	4.05
	Mixed dorm	104	41.6	4.04	4.40	4.30	4.36	4.38	4.22	4.36	4.33	3.94	4.33	4.26	4.27	4.09	4.24	4.36	4.39	4.37	4.47	4.03	3.62
	Private room (Share Bath.)	50	20.0	4.17	4.42	4.24	4.35	4.33	4.08	4.33	4.28	3.32	4.11	3.93	4.31	3.63	3.99	4.18	4.31	4.24	4.13	3.73	3.53
	Private room (Private Bath.)	74	29.6	3.85	4.08	4.12	4.19	4.13	3.90	4.13	4.09	3.13	3.92	3.62	3.73	3.41	3.67	3.86	4.02	3.94	4.05	3.55	3.36
	Sig. (2-tailed)			0.01	0.03				0.03			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Daily rate/ bed/day (Baht)	Lower than100	11	4.4	3.97	4.36	4.42	4.33	4.39	4.09	4.38	4.32	3.64	4.30	4.15	3.91	3.85	4.05	4.33	4.55	4.44	4.42	4.00	3.64
	100 - 400	154	61.6	4.18	4.50	4.39	4.45	4.47	4.18	4.45	4.40	3.61	4.24	4.06	4.29	3.90	4.12	4.25	4.43	4.34	4.40	3.92	3.50
	401 - 800	44	17.6	3.80	4.01	3.96	4.02	4.22	4.07	4.05	4.06	3.38	4.05	3.97	3.95	3.64	3.90	4.01	4.06	4.03	4.14	3.82	3.84
	801 – 1,200	32	12.8	3.66	3.93	3.93	4.14	3.86	3.96	3.96	3.96	3.50	3.97	3.79	3.80	3.51	3.77	4.02	3.85	3.94	4.02	3.47	3.30
	1,201 – 1,600	9	3.6	4.08	4.04	4.15	4.00	3.85	3.92	4.01	3.99	3.70	4.11	3.93	3.78	3.56	3.84	4.07	4.30	4.19	4.33	4.26	4.04
	Sig. (2-tailed)			0.00	0.00	0.00	0.01	0.00		0.00	0.00				0.01				0.00	0.02			

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Description		Frequency	Percentage	Cost	Reliability	Responsive	Assurance	Empathy	Tangible	Intangible	Service Quality	Social Engagement	Functional Value	Emotional Value	Economic Value	Social Value	CVP	External Image	Internal Image	Image	Satisfaction	Loyalty	Social Media Engagement
Frequency of staying	first time	181	72.4	4.05	4.34	4.26	4.32	4.25	4.13	4.29	4.26	3.51	4.15	3.93	4.16	3.72	3.99	4.14	4.29	4.22	4.29	3.77	3.51
	once or more	69	27.6	3.99	4.27	4.23	4.29	4.49	4.10	4.32	4.27	3.70	4.22	4.23	4.07	3.98	4.12	4.28	4.29	4.28	4.32	4.11	3.70
	Sig. (2-tailed)			0.04										0.03								0.02	
Character/ trait	Extrovert:	182	72.8	4.07	4.38	4.25	4.34	4.32	4.16	4.32	4.29	3.59	4.20	4.07	4.18	3.83	4.07	4.23	4.29	4.26	4.33	3.91	3.63
	Introvert:	68	27.2	3.93	4.14	4.24	4.24	4.31	4.00	4.23	4.18	3.50	4.09	3.84	4.01	3.69	3.91	4.03	4.29	4.16	4.22	3.73	3.38
Unique theme	Yes	158	63.2	4.07	4.39	4.33	4.36	4.35	4.24	4.36	4.33	3.74	4.31	4.22	4.23	3.99	4.19	4.30	4.40	4.35	4.46	4.14	3.92
	No	92	36.8	3.97	4.18	4.11	4.23	4.27	3.91	4.20	4.14	3.26	3.92	3.66	3.96	3.43	3.74	3.97	4.11	4.04	4.02	3.38	2.95
	Sig. (2-tailed)				0.05	0.04			0.01		0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
low-cost and independent travel	Yes	224	89.6	4.02	4.30	4.20	4.28	4.31	4.10	4.27	4.24	3.58	4.15	4.01	4.13	3.82	4.03	4.15	4.27	4.21	4.29	3.87	3.54
	No	26	10.4	4.12	4.44	4.63	4.63	4.42	4.27	4.53	4.48	3.37	4.31	4.00	4.14	3.47	3.98	4.39	4.45	4.42	4.36	3.75	3.77
	Sig. (2-tailed)					0.01	0.04																
Hotel instead Hostel	Yes	159	63.6	4.01	4.21	4.12	4.20	4.23	4.01	4.19	4.15	3.46	4.10	3.88	4.10	3.70	3.94	4.07	4.15	4.11	4.19	3.74	3.54
	No	91	36.4	4.07	4.51	4.47	4.51	4.47	4.30	4.49	4.45	3.74	4.30	4.24	4.19	3.95	4.17	4.37	4.54	4.45	4.49	4.08	3.59
	Sig. (2-tailed)				0.01	0.00	0.00	0.02	0.02		0.00	0.04	0.04	0.00			0.02	0.01	0.00	0.00	0.01	0.02	
Rely on social media	Yes	215	86.0	4.04	4.27	4.24	4.27	4.30	4.11	4.27	4.24	3.54	4.13	3.97	4.14	3.75	4.00	4.19	4.25	4.22	4.29	3.85	3.58
	No	35	14.0	3.97	4.58	4.30	4.54	4.44	4.18	4.46	4.41	3.71	4.42	4.27	4.10	4.05	4.21	4.07	4.55	4.31	4.35	3.95	3.46
	Sig. (2-tailed)				0.00																		
Purpose	for travel	135	54.0	4.01	4.27	4.19	4.25	4.28	4.04	4.25	4.21	3.55	4.14	3.95	4.07	3.73	3.97	4.14	4.21	4.18	4.25	3.74	3.41
	for holiday	22	8.8	4.23	4.45	4.23	4.49	4.27	4.21	4.36	4.33	3.83	4.30	4.18	4.12	3.83	4.11	4.30	4.29	4.29	4.50	4.19	3.88
	for business	5	2.0	3.47	3.80	4.33	4.47	4.13	4.20	4.19	4.18	1.93	3.60	3.73	3.20	3.00	3.38	4.07	4.00	4.03	3.67	3.20	2.93
	visiting friends	3	1.2	4.45	4.44	4.56	4.22	4.22	4.11	4.36	4.31	3.33	4.45	4.33	4.67	3.78	4.30	4.34	4.67	4.50	4.56	4.00	3.78
	for MICE	6	2.4	3.67	3.45	4.22	4.06	3.78	3.33	3.88	3.77	2.56	4.05	3.39	3.28	3.22	3.49	3.45	3.61	3.53	3.78	3.50	3.28
	Other	79	31.6	4.07	4.46	4.34	4.38	4.46	4.27	4.41	4.38	3.69	4.22	4.12	4.34	3.97	4.16	4.27	4.48	4.37	4.41	4.04	3.78
	Sig. (2-tailed)				0.03							0.00			0.00		0.05						

Description		Frequency	Percentage	Cost	Reliability	Responsive	Assurance	Empathy	Tangible	Intangible	Service Quality	Social Engagement	Functional Value	Emotional Value	Economic Value	Social Value	CVP	External Image	Internal Image	Image	Satisfaction	Loyalty	Social Media Engagement
Accompany	Alone	95	38.0	4.12	4.51	4.43	4.46	4.46	4.36	4.47	4.44	3.83	4.36	4.30	4.26	4.03	4.24	4.37	4.52	4.45	4.55	4.17	3.80
	with Friends	155	62.0	3.98	4.20	4.14	4.22	4.24	3.97	4.20	4.15	3.40	4.06	3.83	4.05	3.64	3.90	4.06	4.15	4.10	4.15	3.67	3.42
	Sig. (2-tailed)				0.00	0.01	0.02	0.04	0.00	0.01	0.00	0.00	0.00	0.00		0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01
Travel Plan	flexible	202	80.8	4.04	4.31	4.28	4.35	4.34	4.08	4.32	4.27	3.51	4.16	3.98	4.12	3.79	4.01	4.14	4.26	4.20	4.27	3.79	3.46
	Relatively fixed	48	19.2	3.99	4.33	4.10	4.16	4.22	4.29	4.20	4.22	3.79	4.21	4.12	4.18	3.79	4.08	4.33	4.42	4.37	4.44	4.17	4.01
	Sig. (2-tailed)																					0.03	0.00

Model Fit Test: SEM path analysis result is given in Fig. 2, which shows the path coefficient, and the R-square predicted for the respective dependent variable, and the correlations of the exogenous indicators on the stimuli layer. The SEM focuses on latent variables S, O, and R variables rather than the observed variables, and the basic objectives of SEM are to provide a means of estimating the structural relations among the unobserved latent variables of a hypothesized model free of the effects of measured errors.

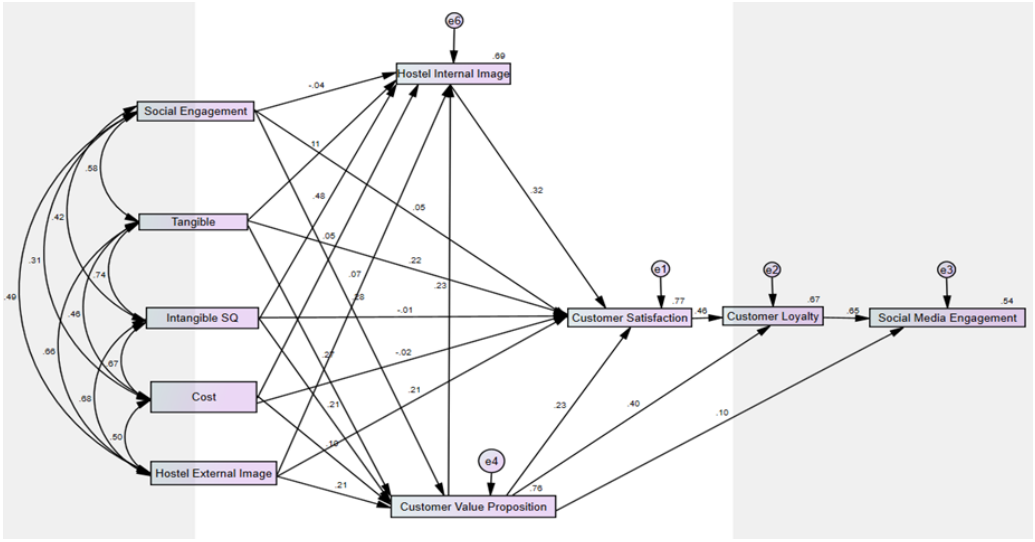

Fig. 2: The Validated Structure Equation Model

To be specific, the purpose of SEM model estimation or model fit is to find a set of model parameter θ to produce $\sum(\theta)$ so that $[\sum - \sum(\theta)]$ can be minimized, where $\sum(\theta)$ denotes the population covariance matrix of observed variables. The model is tested based on Maximum Likelihood (ML) function:

$F_{ML}(\theta) = \ln |\widehat{\Sigma}| + \text{tr}\,(S\widehat{\Sigma}^{-1}) - \ln |S| - (p+q)$

Where S and $\widehat{\Sigma}$ are the sample and model estimated variance and covariance matrices, respectively, and (p+q) is the number of observed variables involved in the model yielding (p+q)(p+q+1)/2 unique variances and co-variances.

The fit indices for the structural model given in Fig. 2 are: The χ^2 of the structural model is 21.78 with 13 degrees of freedom, and p-value ≥ 05 (indicating perfect absolute model fit) and χ^2/df below the upper threshold of 5 (at 1.629). With p ≥ 0.05, there is an absolute model fit performed using Maximum Livelihood (ML). The absolute fit assesses how well the model specified reproduces the observed data [40], and is also evidenced in the root mean squared error of approximation (RMSEA) at 0.050 [37]. The incremental fit indices, which assesses how well a specified model fits relative to some alternative baseline model, with indexes NFI = 0.99, RFI = 0.966, IFI = 0.996, TLI = 0.987, and CFI = 0.996, all closer to 1. Table VI shows the model fit statistics obtained from AMOS-run SEM analysis.

The following Table VI presents the SEM model fit-summary of the model parameters and indexes based on the fitting functions using Maximum Livelihood (ML).

Table VI: Model Fit Statistics

CMIN					
Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	52	21.178	13	.069	1.629
Saturated model	65	.000	0		
Independence model	20	2143.070	45	.000	47.624
Baseline Comparisons					
Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default Model	.990	.966	.996	.987	.996
Saturated Model	1.000		1.000		1.000
Independence Model	.000	.000	.000	.000	.000
RMSEA					
Model	RMSEA	LO 90	HI 90	PCLOSE	
Default Model	.050	.000	.088	.451	
Independence Model	.433	.417	.448	.000	

Hypothesis Testing: The correlations shown in Table IV provides the support for the first hypothesis H1. The other hypotheses, H2 to H7, are supported based on the structural path model given in Fig. 2 and the supporting details in Table VII. The SEM shows that both hostel internal image and customer value propositions play significant mediator roles, which leverages the stimulation drivers further to impact on customer satisfaction. Fig. 2 also shows that customer loyalty is an important mediator, which delivers a role to stimulate and motivate the hostel customers to share their experiences in social media.

Table VII: Hypothesis Supporting Details

Dependent Variable	**Independent Variable**	**Beta**	**t-value**	**Sig.**	**Hypothesis**	**Result**
	Tangible SQ	0.11	1.71	0.09		Supported
Organism 1:	Intangible SQ	0.48	7.12	0.00		
Internal Image	External brand Image	0.07	1.33	0.19	H2	
R^2 = 0.69	Social Engagement	-0.04	-0.82	0.42		
	Cost	0.05	1.09	0.28		
	CVP	0.23	3.20	0.00	H3	Supported
Organism 2: CVP	Tangible SQ	0.27	5.11	0.00		
R^2 = 0.76	Intangible SQ	0.21	3.57	0.00		
	External brand Image	0.21	4.54	0.00	H2	Supported
	Social Engagement	0.28	7.12	0.00		
	Cost	0.10	2.26	0.03		
	Tangible SQ	0.22	3.99	0.00		
	Intangible SQ	-0.01	-0.22	0.83		
	External brand Image	0.21	4.38	0.00	H2	Supported
Organism 3: CS	Social Engagement	0.05	1.06	0.29		
R^2 = 0.77	Cost	-0.02	-0.50	0.62		
	CVP	0.23	3.52	0.00	H4	Supported
	Internal brand image	0.32	5.73	0.00		
CL	CVP	0.40	6.57	0.00	H5	Supported
R^2 = 0.67	CS	0.46	7.56	0.00		
SME	CVP	0.10	1.51	0.13	H6	Supported
R^2 = 0.54	CL	0.65	9.69	0.00	H7	Supported
Note: SQ = Service Quality, CVP = Customer Value Proposition, CL = Customer Value, SME = Social Media Engagement						

Conclusion: Prior literature highlights very little of empirical and conceptual research involved in explaining and characterizing how the customers perceive of their experiences staying in hostels. Thus, very limited insight can be gained. As such, this research adapts a widely acknowledged S-O-R paradigm to guide the conceptualization in explaining and presenting evidence pertaining to how the customers perceive and react to their experiences staying in hostels. Due to a lack of published information and knowledge structure characterizing customer behaviors in hostel context, the research effort is useful. The comparative statistical analyses provide a rich spectrum of insights of practical implications.

Four groups of variables are shown significantly important enacting the roles of stimuli. One group is controllable by the hostels – namely the tangible and intangible service quality. The second group is the living facility and compound provided by the hostels to facilitate the social engagement of the guests among themselves. The third involves cost perception of the hostel guests. The fourth is the hostel external image which the guests formed prior to purchase. Customers process these sets of information and sort out their mental stages in terms of perceived value (the perceived customer value proposition, CVP) and hostel internal image formed. Thus, there is a clear information-processing taking place, and hostels should acknowledge it [41], in the view that customers form memory consisting of an array of cues formed of social engagement, service qualities (tangible and intangible), cost and hostel external image, which influences the states of their satisfaction, mediated through the influences of hostel internal image and customer value proposition [42].

Two layers of organistic states are demonstrated, namely (1) the first layer, consisting of hostel internal image and customer value proposition, and (2) customer satisfaction – the second layer. While the

second layer is affection oriented, the first layer is cognitive in nature, driven by "an interactive relativistic preference experiences" [13] (p.5) of the customers and the judgments formed of the customer's assessment of what has happened (benefits and sacrifices or costs incurred) [43]. Due to the service-nature and the social emphasis of hostel atmosphere, customer value proposition involves four value domains, namely functional value, emotional value, economic value, and social value, and they are shown to significantly impact on satisfaction, loyalty, and social media engagement. The latter describes the behavioral tendency of the hostel customers to share, post pictures of what they experience at the hostels in social media platform. Customer social media engagement has received increasing attention [32], particularly playing a role to co-create brand by involving in a brand community [29]. Loyalty is a significant mediator in leveraging the perceived values to arrive at customers sharing in social media, which can serve as ambassador promoting the hostel brand.

Numerous important practical implications can be suggested to the existing hostel or as messages to the hostel sectors on areas to be emphasized. The following states the significant ones: Hostels should realize a much higher level of efforts is needed to stimulate the Asian groups so it drives more favorable organistic perceptions and thus responses. Though the students should be more active in social media, but these groups are shown to exert lower level of efforts in sharing what they experience at the hostel, and promotional incentives should be derived to stimulate their sharing. The single-group perceives significantly higher that the hostel price is cheap, and that the hostel has well-informed price, which signifies a higher level of price-sensitivity, which also shows higher perceptions on other aspects of service qualities, particularly with respect to "responsiveness". The single-group also has favorable image formation of the hostel, of both they received from the social media and their own experiences. The single-group should be segmented for a particular attention, as the hostel can leverage their favorable attitudes. Those booked the hostel in shortest advance, within 1-2 weeks, show higher level of perceptual agreements with all the constructs studied, and thus, the model dynamics should be strategically maintained and promoted for this group of customers. The similar trend is exhibited also for those staying one-night as compared to longer-duration stays, partly attributable to the exhaustion of the experiences with the services provided by the hostel. The hostels would need to be more innovative and service conscious in order to service the groups of longer-duration stays. The same-sex group has shown favorable perceptions on all constructs studied, and the private-room customers think the other ways. Thus, it is important the hostel owners start to identify them for further investment in order to stimulate their experiences in more active way.

Price wise, 100-400 Baht per-bed day shows high level perceptual responses on all the constructs studied, but gradually wear off when daily rates increase. Thus, it is important the hostels pay a close attention to how their customers perceive pricing and the relevancies of other factors in order to yield at an optimal level. First-timers are shown to reflect higher level of emotional value received, leading to also higher loyalty value. The hostels should actively target them and exploit their emotional characteristics. Hotels of unique themes should also be stressed actively as they significantly induce higher level of perceptual experiences in the stimulation, organism and response aspects, which is important driving up the performance of the hostel.

Reading the signal from the "Alternative attitude (Hotel instead of Hostel)", it indicates the existence of stickiness – that is, there is a group of customers who prefer hostels to hotels. Those who travel alone have higher level of perceptions of the constructs studied, when compared to staying with friends. The hostels should actively aim to promote more active experiences for shared partnership situations. Those with relatively fixed travel plan are significantly more loyal and tend to engage socially in sharing the experiences of the hostel with others on social media, and the hostel should actively promote this group and embark them as brand ambassadorship.

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LAYING THE EXPLORATORY GROUNDWORK FOR STUDYING EMPLOYEE-LEVEL CONTRIBUTION TO WORKPLACE ORGANIZATIONAL PERFORMANCE: FRESH-CUT MINI-PINEAPPLES FACTORIES IN CHIANG RAI, THAILAND

NANG HERK LENG PYO, DR. CHAI CHING TAN

Abstract: This research lays the exploratory groundwork for studying employee-level contribution to workplace organizational performance. The empirical data were collected from among the managers and the workers of two important value-chain players of the fresh-cut mini-pineapples industry in Chiang Rai, namely the manufacturers and the traders. This research shows that a skillful use of interviews, on iterative basis such as on pre- and post-questionnaire-based survey, can help provide a rich description on the statistical analysis. A total of 312 employees participated in the questionnaire-based survey located in the sub-districts of Ban Du, Nang Lae and Thasud, Mueang Chiang Rai District, Chiang Rai Province, Thailand. Overall, we conclude that a more job-related or organizational-level construct should be linked to organizational level of performance, if one is to significantly improve the percentage of variance explained. JD-R (Job Demand-Resources) aspect is pointed out, which should be supplemented to the motivation and trust factors, to stimulate higher level of participation and contribute to organizational performance.

Keywords: Importance-Performance Analysis (IPA), the Theory of Planned Behavior (TPB), mixed method

Introduction: Thailand is a key pineapple producer in the world, and Chiang Rai province stands up eminently on two unique species, namely Nang Lae and Phu Lae (mini-pineapple). As reported from the Office of Agricultural Economics, there are currently 15,463 Rai of pineapple plantation in Chiang Rai, dominated by three sub-districts, namely, Ban Du, Nang Lae, and Thasud [1]. Phu Lae mini pineapples are highly demanded because of crispiness and sweet taste, and are registered as a Geographical Indication (GI) of Chiang Rai Province, Thailand [2]. Shown in Fig. 1, the body is small and round shape with diameter of 100-120 mm, and weighing 0.15-1.00 kg, approximately, and the pineapple fresh color is relatively light yellow, and the fresh is crispy and aromatic. The core is crispy and edible [3]. However, due to a small size and deep fruitlet, peeling and cutting the pineapple is not easy and thus, the consumers prefer to buy the ready-to-eat products.

Fig. 1: Phu Lae (Mini-Pineapples) and its Fresh-Cut

Three major pineapple's export markets are China at 81%, Laos 10%, and Singapore 5%. China imports pineapples through Guangdong Province (by sea) and Yunnan Province (by land) [1]. Furthermore, with the readiness of logistics infrastructure through routes R3W and R3E to China, which has a total distance of 916 kilometers under the GMS [4], fresh-cut mini-pineapples trading will be further leveraged. For uniformity in doing business and according to [5], "The contents of each package must be

from the same location, be uniform of the variety, quality, size and color. And in packaging, pineapple must be packed in such a way as to protect the produce properly."
This research focuses on both the manufacturers and traders of the pineapple industry in Chiang Rai. Manufacturers perform and control the entire production to packaging processes as shown in Fig. 2, whereas, traders' jobs are responsible for only production processes and they need to deliver according to manufacturers' requirements, and the products from the traders to the manufacturers will be randomly checked.

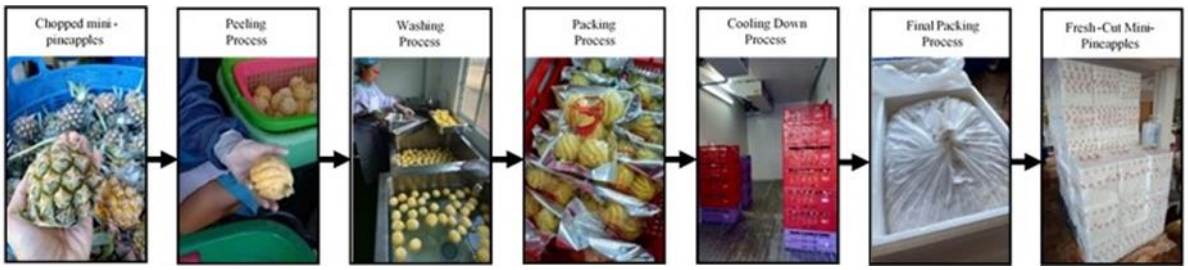

Fig. 2: Production Process

This research thus sees the gap of little empirical studies in pineapple industry for entry-point and opportunity. Without the available published materials for analytical comprehension and conceptualizations, the researchers need to exploit field observations and face-to-face interviews. The field observations to numerous production sites and traders' facilities indicate that all the production processes are identical importance, and employees have to ensure every process meeting the standard. As a variety of production and quality problems could emerge, and also be caused by the traders, it is thus important to take a closer look to how the employees engage and accomplish the tasks, and correspondingly, contributes to organizational performances.

Iterating the conversations with the managers of both manufacturers and traders, the Theory of Planned Behavior (TPB) is judged, conceptually, to be applicable to explore examining the employee-domains of contributions. Thus, the purpose of this research is:
To explore how theory of planned behavior (TPB) can be validly used to influence employee-contributed organizational performance.

Additionally, this study aims to determine which factors from the TPB are important or which are less important along with the gap from IPA and the strategy from the IPA quadrants. In addressing the research objective, we strive to answer the following research questions:

- *Which TPB factors are judged significantly able to influence employee-contributed organizational performance?*
- *What insight can IPA provides in relating to the targeted TPB?*

As this research is exploratory in nature, the researchers expect additional important insights can be derived besides the raised research questions, and which can further help the researchers to revise the theoretical framework to better able to capture the relevant structure of relationships of variables involved.

Literature Review: Theory of Planned Behavior: This research suggests the use of TPB as the theoretical foundation to conceptualize the factors influencing the production-employees to contribute to organizational performance. TPB was first proposed by Ajzen in 1991 [6] and has become one of the most popular theories to study the behaviors of people in an inclusive range of fields [7]. It emphasizes that behavior of an individual is determined through both behavioral intentions and the three intention-divers. The three intention-drivers are an individual's attitude, subjective norm, and perceived behavior control [6]. TPB is discussed in [8] as an aspect of the Buddhist approach to studying any human behaviors, i.e. brand management, HRD, social entrepreneurship, corporate citizenship behaviors, and

employee engagement. Attitude is considered, as it shows a dispositional tendency to act in certain way [8]. Apart from the internal or organistic attitude, employees can also be influenced or inclined to act through the expectations, prospects or viewpoints of some important people, known as the subjective norms [6], [9]. For instance, employees performing good behaviors because other people (managers, supervisor, or co-workers) expect them to do. Also, as demonstrated in [10], and elsewhere [11], it is important employees perceive and form attitude that they can easily accomplish the tasks assigned – explaining the "perceived behavioral control (PBC)" phenomenon as advocated in TPB.

The Multi-Dimensional Nature of The TPB Pre-Intentional Factors:
Attitude: TPB have been complained for being too limited when it comes to clarifying the affective side of the behavior [12], [13]. This study investigates two dimensions of attitude which are cognitive attitude and affective in which both are key components of attitude. Cognitive attitude is when employees have positive beliefs, thoughts, or evaluation towards the workplace, and affective attitude is when employees have positive emotional or feeling towards the workplace.

Normative factors: Normative construct is multi-dimensional in nature, and subjective norm of the TPB is assumed only a domain of it, which should include also personal norm and descriptive norm [7], [14]. According to [14], [15], personal norm describes individual's own responsibility or obligation that can influence the behavioral intention of a person, i.e. feel guilty to perform bad behaviors in the workplace. Whereas pertaining to descriptive norms, it depicts the normative molding of a belief and working principle of the employees by observing and learning coworkers performing good behaviors in the workplace.

Perceived behavioral control (PBC): PBC is used as a general construct, even there are some studies in which PBC is suggested that "factors internal to the individual could be phrased and assessed in terms of ability and factors external to the individual in terms of control" [16]. Thus, the exact shapes of PBC are never straightforward, for instance, [10] identifies the perceived service quality as a form of PBC that develops the intention of customers for continuing relationship. Interviews of this research review three levels of PBC: Individual, operational, and organizational levels:

- Individual level of PBC in this study refers to the ease or difficulty of an employee' beliefs towards the task, which is contributable to his or her skills, knowledge, carrier experiences, and self-efficacy.
- At the operational level, PBC is characterized by employee relations and teamwork, and employees are grouped for each role and responsibility starting from raw material processing to final packaging.
- Organizational level of PBC concerns about the guidelines for production, salary, work relaxation, time requirement to finish the job, and transformational leadership provided by the organization.

Motivation and Trust: While the TPB stops with the above three antecedents to behavioral intention and behavior, this research, based on the interviews, considers two additional constructs, namely motivation and trust:

- Motivation – Many researchers have begun to study the roles of motivation in stimulating the behaviors of employees. According to [17], motivation defines what employees do, how they do it, and how hard they work with two main factors of motivation which are intrinsic and extrinsic motivation. This research considers intrinsic motivation (internal motivation) and extrinsic motivation (external motivation). Employees with intrinsic motivation show interest and enjoyment in the task itself. Meanwhile, employees with extrinsic motivation are motivated by the outcome of task such as bonus or incentives.
- Trust – Reference [18] defines trust as connoting future behavioral expectations that are grounded in an uncertain track of advantage or disadvantage. Moreover, trust has been studied and applied as a significant factors in many fields, especially a study between trust and a several of work behavior such as, organizational citizenship behavior [19], [20]; employee performance, both individual and as a group [21], [22]; open communication [23]; a commitment to the team's objectives [24]; team performance [25], [26]; and increased coordination and cooperation [27]. And during the observation,

we see that trust can impact the benefit of the company and strengthen the commitment of the members.

Employees' behaviors: This research considers three domains of employee behaviors: voice behavior, physical behavior, and affectionate behavior. Voice behaviors refer to the employees' discretionary behavior of speaking out an ideas, suggestions, or concern about work-related problems with intent to make organizational or unit improvement. Physical behaviors refer to employees having positive execution or behavior in the workplace, and affectionate behaviors refer to employees having positive feeling in performing good behaviors in the workplace.

In view of the above discussions, which present the deduced logics of the relevant constructs from the literature and the interviews, the conceptual framework shown in Fig. 3 would be used for the empirical validation.

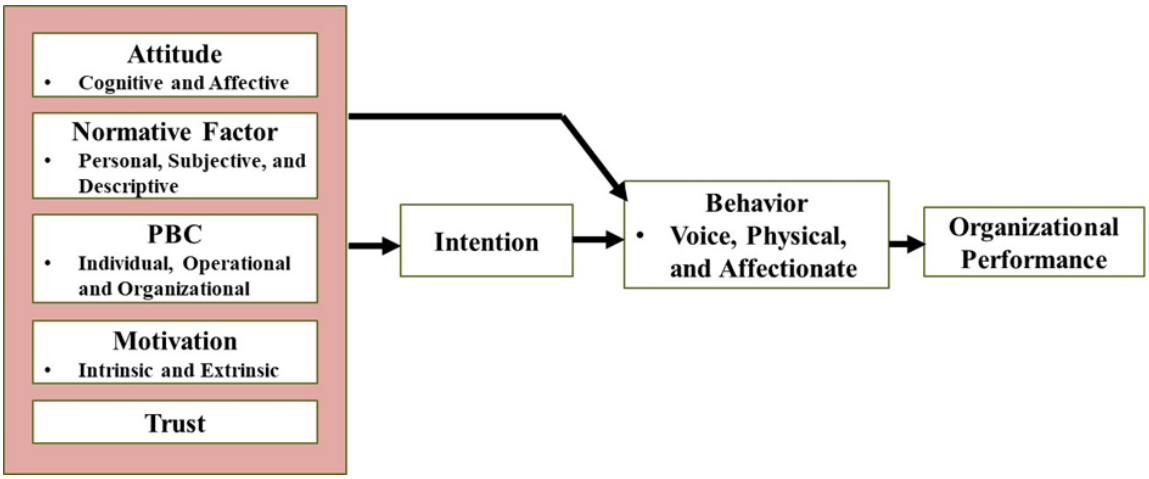

Fig. 3: The Extended TPB Conceptual Framework

Importance-Performance Analysis (IPA):_Until today, importance-performance analysis (IPA) is still considered as one of the most powerful tools for business and management decision making [28], [29]. IPA is based on the concept that satisfaction is a result of a preference for an object or service and the reality (the actual performance). We consider and obtain the perceptions of the managers and the employees of the extended TPB conceptual model. The simplicity and usefulness of the IPA framework is its 2D structural layout based on x-axis (which extends from fair performance to excellent performance) and y-axis (which extends from slightly importance to extremely importance). In other words, by overlapping the perceptions of "importance" and "actual performance" of the factors, one can assume four categories of strategies to allocate resources [31], namely 1) Keep up the good work, 2) Concentrate her, 3) Possible overkill, and 4) Low priority.

Research Method: This study undertakes mixed method to provide a better understanding of the research problems; both qualitative and quantitative methods for data collection and analysis are combined. In particular, a sequential mix-method approach is used, started with qualitative observations and preliminary interviews, followed by literature reviews to sort the derived concepts in structural form, as depicted in Fig. 3, which establishes the questionnaires as exploratory effort in IPA format. In IPA form, the questionnaire statements are not detailed, and only definition is stated and explained for the factors, and perceptions are sought in terms of their "importance" and "actual performance" levels. The IPA format provides the flexibility of the exploratory stage when things are uncertain and the demographics are not clear i.e. the ability of the respondents to respond to the reliability requirement. The questionnaire items are given in the Appendix.

The Survey Participants: Participants of the surveys were drawn from the manufacturers and traders of fresh-cut-pineapples factories located in the sub-districts of Ban Du, Nang Lae and Thasud, Mueang Chiang Rai District, Chiang Rai Province, Thailand. One of the manufacturers started entering into China market. One trader has its own modern trading and two traders are trying to become manufacturers. The instructions were given to the respondents prior to their responses. Thus, the surveys were self-administered. A total of 312 valid responses were analyzed. Table I shows the statistics of the responses.

Table I: Details of the Respondents

Factories	Interview Informants (Managers)	Questionnaire Participants (Employees)
Manufacturer 1	1	47
Manufacturer 2	1	38
Manufacturer 3	1	35
Manufacturer 4	1	30
Manufacturer 5	1	31
Trader 1	1	21
Trader 2	1	18
Trader 3	1	10
Trader 4	1	15
Trader 5	1	20
Trader 6	1	22
Trader 7	1	25
Total	12	312

Data Analysis and Results: The demographic profiles of the survey participants are given in Table II.

Table II: Demographic Characteristics of Participants

Demographic		**Frequency**	**Percentage (%)**
Company Type			
	Manufacturer	181	58.0
	Trader	131	42.0
Company Location			
	Thasud	81	26.0
	Nang Lae	94	30.1
	Ban Du	137	43.9
Gender			
	Male	106	34.0
	Female	206	66.0
Designation			
	Peeler	185	59.3
	Packer	64	20.5
	Production Service	63	20.2
Work experience at current work			
	Less than 1 year	159	51.0
	1-2 years	137	43.9
	More than 2 years	16	5.1
Start working time			
	Before 8 AM	81	26.0
	Between 8-10 AM	216	69.2
	Later than 10 AM	15	4.8
Average working hours per day			
	Less than 8 hours	18	5.8
	8 to 10 hours	232	74.4
	More than 10 hours	62	19.9
Living Area (How far from factory?)			
	Less than 3 km	120	38.5
	3 to 5 km from factory	136	43.6
	More than 5 km	56	17.9

The analysis is arranged in two sequential steps. First, the IPA analysis is stated. Second, SPSS-statistical analysis is performed, and the interviews-based scripts were analyzed and supplemented to provide a descriptive understanding of the derived results. For the IPA, the constructs and the numbering of the questionnaire (variable) items are given in Table III.

Table III: Numbering of the IPA

No.	Factors	TPB
1.	Skills of employees	Individual level of PBC
2.	Knowledge of employees	
3.	Career experiences	
4.	Self-efficacy	
5.	Employee relations	Operational level of PBC
6.	Teamwork	
7.	Guidelines for production	Organizational level of PBC
8.	Salary	
9.	Work relaxation	
10.	Time requirement to finish the job	
11.	Transformational leadership	
12.	Intrinsic motivation	Motivation
13.	Extrinsic motivation	
14.	Cognitive attitude	Attitude
15.	Affective attitude	
16.	Personal norms	Normative factors
17.	Subjective norms	
18.	Descriptive norms	
19.	Intention	Intention
20.	Voice behavior	Employees' behaviors
21.	Physical behavior	
22.	Affectionate behavior	
23.	Trust among colleagues	Trust
24.	Trust with supervisor	

IPA determines which factors from TPB are important or which are less important along with the gap, and determined the four quadrants in order to find of which strategy the organization should use (See Fig. 4 and Fig. 5). From the analysis of IPA gap:

- All the factors from TPB are important but there are gaps between importance and actual performance.
- The factor that can strongly influence the behaviors of the employees is the salary or wage provided by the company, which contributes to PBC. Moreover, the better the financial incentive the employees receive, the more they are motivated to contribute. The managers should provide sufficient, effective financial incentive to leverage employee motivation.
- Trust is important. When the employees trust their supervisors, who give them a job and wages, this might build up more job commitment and would continue on their job for long term.
- Among the three behaviors, physical behavior seems to be the most important factor but from the observation, voice behavior is also important as one manager said that these behaviors make them to know the work condition and situation well enough to make better decisions.
- From the observation, employees of manufacturers seem to understand how to get the job done better than the employees from the traders.

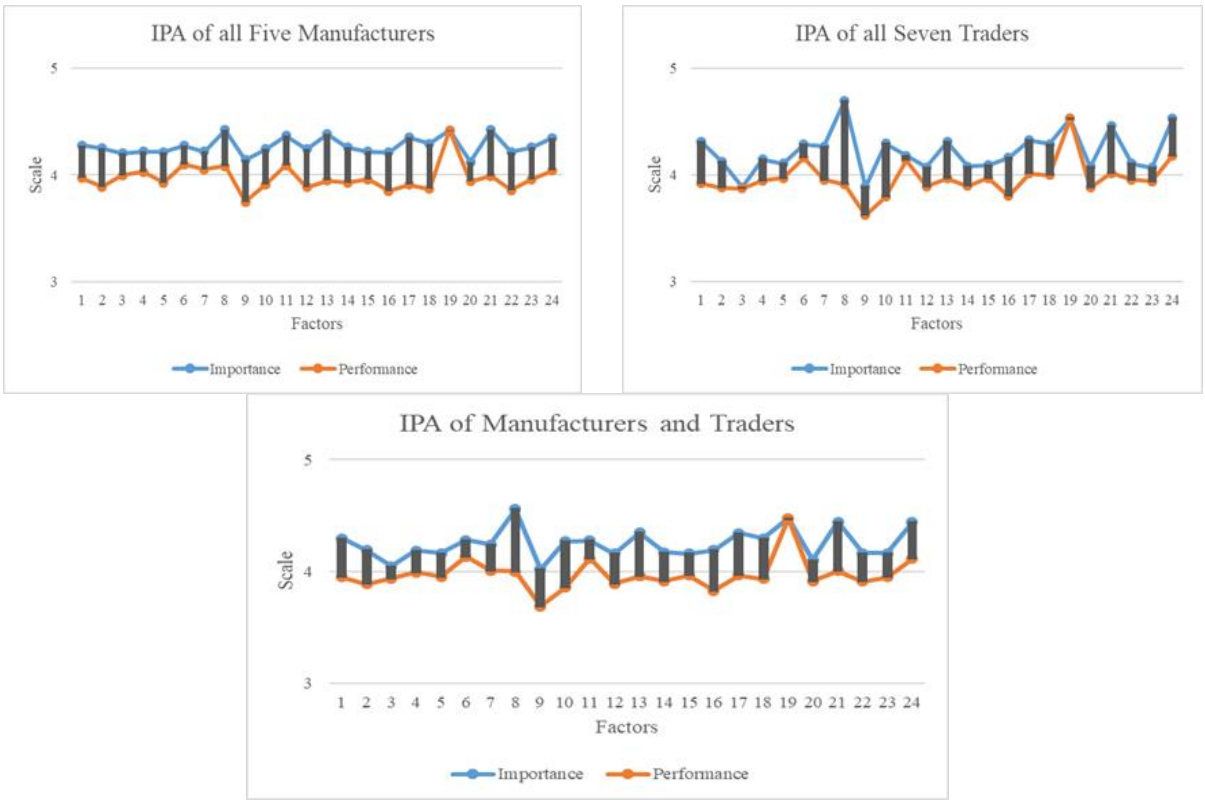

Fig. 4: The Perceptual Gaps of IPA

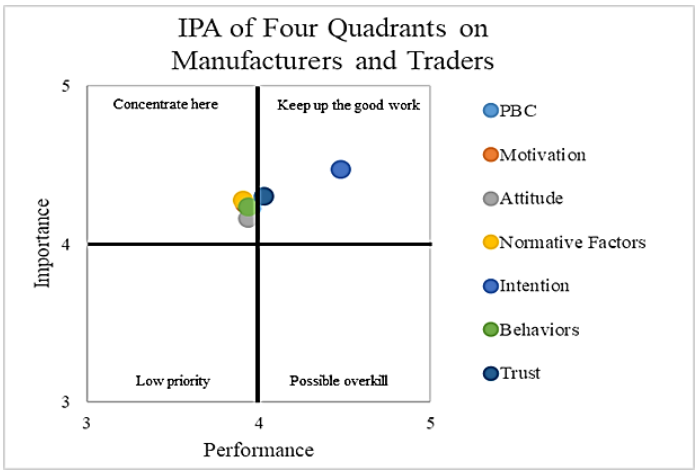

Fig. 5: The Four Quadrants of IPA

Fig. 6 presents the perception of the employees of manufacturers and traders, which are segregated into four quadrants depending on the corresponding scales obtained in "importance" and "actual performance".

- All factors except intention and trust are ranked as high importance but the actual performances are low where the factors are in "Concentrate here" quadrants. However, this is a good symbol that there are no factors in possible overkill or low priority quadrants.
- The managers should allocate more resources to "Concentrate here", while continuing the effort on the "Keep up the Good Work" areas, in particularly dealing with fostering trusts with the employees.

The performance domains are three, namely cognitive performance (i.e. ideas get recognized and implemented), operational performance (i.e. meeting operations objectives, such as workplace cleanliness, waste reduction, process improvement, product quality, on-time delivery) and affective performances (i.e. positive energy and commitment of work of the employees). As shown in Fig. 6, the employees of the manufacturers show slightly higher level of perceptions across all three domains.

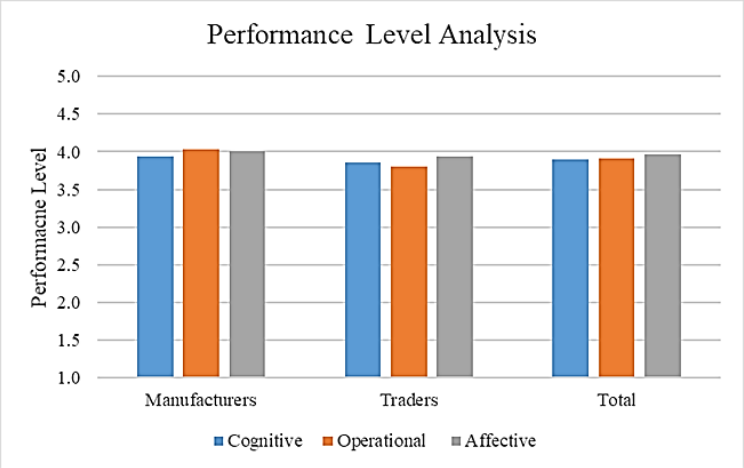

Fig. 6: Performance Level Analysis of the IPA

Model Testing and Proposing New Model: During the data collection, the researchers experienced challenges, which could impact on statistical analysis such as: Employees at the factories are hired but have no intention to hire for long-term contract. The management systems are not well-organized and the employees working under the factories did not go through proper secondary-level education, where the researchers have to provide more explanation during data collection. All these problems could cause the results of data collection with less consistency, and thus causing the ability to find higher level of variation explanation more difficult.

As discussed in the literature review, after the data collection and analysis of the data, TPB doesn't simply influence the performance as expected. We understand that this is typically a state of possibility when the research is conducted serving exploratory purpose. Even though statistical analysis results are not at very strong level, we still can capture some very important factors namely: organizational level of PBC, affective attitude, intention, voice behavior and trust, in their ability to explain the organizational performance level, as shown in Fig. 7, which gives us a new perspective for the next stage of research.

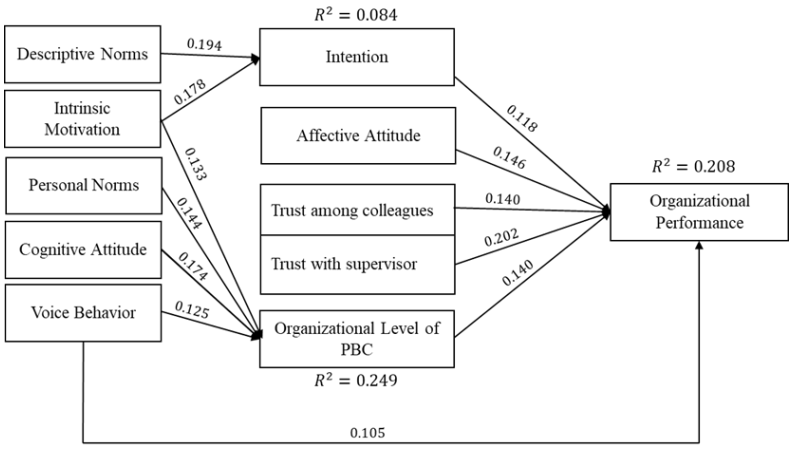

Fig. 7: The Significant Structure of Relationships

The statistical structure shows only the significant factors, to p <= 0.001 level, based on multiple-regression analysis. Twenty and eight per cents of the organizational performance can be explained by five important factors: namely 1) intention, 2) affective attitude, 3) trust among colleagues, 4) trust with supervisor, and 5) organizational level of PBC. The weights are relatively equal, except the intentional level is lower. When the result was further brought to the attention of the managers, they take note that the production workforces "just simply do the job, as there is not much relevancy relating to intention." This insight provides a refreshing perspective for the next phase of our research – to focus instead of job resources and demand, trust and motivation, rather than on individual attitudes and intentions. Elsewhere, in other research, they have shown that a trusting working environment can significantly strengthen the commitment of the workforces, and thus contributes to organizational performances [30]. Stressed by one manager that intention is probably well-established for they need a job:

> *"We mostly hire Aka (people who live on the hills) as they have more energy and intention, compared to Thai nationalities who are good at detailed works. As soon as we give Aka an opportunity to work, we have gained their respect followed by their trust (trust with supervisor). I believe that they have a really strong intention as they are very hardworking, and we can clearly see that they are happy with their work" (affective attitude)*

According to Importance-performance analysis, physical behavior has the highest importance level among three types of behaviors. Stated one trader:

> *"We expect technical skills from the employees and thus, their physical behaviors matter the most for us."*

However, from the multiple-regression test, voice behavior turns out to be the most significant variable that impacts the performance. Relatedly, voice behavior is stressed by one manufacturer;

> *"It is true that physical behavior is important; but we also note that the bold expressing of ideas is equally useful. When they see something is not right, have any better ideas or suggestions, their words become worthy and help us to make better decisions (voice behavior)."*

Regarding employees giving their ideas or suggestions, employees in such factories are mostly grouped as team, such as peelers, packers, or quality controllers. Thus, the ideas suggested represent as a team rather than individual. This overall sense actually changes the nature of TPB, where we originally give more attention to attitude, normative factors, PBC and intention towards behaviors, but we find, from the statistical analysis, that voice behavior and team-based trust are more important. Statistically, a 24.9% of the variance of the organizational level of PBC can be explained by voice behaviors, cognitive attitude, personal norm, and intrinsic motivation. These factors demonstrate and shed light on how the employees feel confident to perform the tasks, but they are conceptualized at the personal level. However, the percentage of variance explained is relatively low. When we brought this finding to discuss with the managers and the employees, they provide additional insight that we can next look into job-level i.e. job resources and the demand, instead of focusing on personal level in an attempt to explain PBC. In reality, Fig. 7 has already shown some level of job resources such as trust and organizational level of PBC. Specifically, there levels of PBC are studied in this research: individual, operational and organizational. All the three levels are correlated with each other and organizational level of PBC is the most significant. There is a clear distinction between the three levels of PBC, illuminated by a manager:

> *"When an employee is having skills and knowledge with experience (Individual Level of PBC), it doesn't mean that he or she will perform to our requirement. We need each employee in their own team to have a good relationship and teamwork (operational Level of PBC), by sharing and figuring what would be best in order to perform the jobs. However, as a supervisor or manager, we have to provide a plan for what they have to do exactly for their*

> *duties, paid equally, make them feel that they are relaxed in our company while working" (Organizational level of PBC)*

A similar theme highlighting organizational level of PBC is stated by another manager from a different factory:

> *"Guideline to our employees are very important. These resources enable to perform as expected, and in turn, they have confidence, and we are delighted" (Organizational level of PBC)*

From the above discussions, we observe that employees are generally lacking of conceptual skills and what matter the most are technical skills. The managers do all the management functions, including planning, organizing, leading and controlling. Among the three levels of PBC, organizational level of PBC is the most significant factor towards performance. This leads us to study the organizational level of PBC by use of Job Demand-Resources theory in our next phase of research [10].

Based on either T-test or ANOVA test, there are some significant differences found on company type, experience and average work hours. Performance of manufacturers and traders are significantly different, with higher performance level perceived by the manufacturers. We also found that duration of experiences of the employees has positive relationship to trust level. Also, employees with higher working hours have higher operational PBC (i.e., employee relations and teamwork), and they also build stronger relationships with their co-workers and has better teamwork in order to finish the job and meet the standard.

Conclusion: This paper analyzed the determinants of organizational performance using an extended TPB, with more latent variables (motivation, trust, and normative factors) than the original TPB. The results showed that performance is predicted by affective attitude, intention, trust, voice behavior and organizational level of PBC. The intention is influenced by descriptive norms and intrinsic motivation. The organizational level of PBC is influenced by cognitive attitude, personal norm, intrinsic motivation and voice behavior. The results have shown that trust with supervisor has the most significant influence on organizational performance, meaning that the stronger the trust the factories can build, the more job commitments are demonstrated. Most of the employees are lacking of education, and only technical skills are needed in the workplace, which the managers control all the management system. Thus, organizational level PBC has control over performance. Apart from the physical behavior, voice behavior is very important apart because, when the employees dare to suggest ideas, it is beneficial to organization where the managers could make better decisions. The expectation for voice or physical behaviors can be incorporated into job demand, but the job resources must be matched [8], [10]. Additionally, the results from IPA have also shown that trust, organizational level of PBC and voice behaviors are very important factors. However, there are gaps between importance and actual performance, and the pineapple industry should allocate more resources to implement the "concentrate here" strategy. Furthermore, IPA and performance level analysis show that manufacturers have better performance when compared to the traders.

There are some limitations in the aspect of methodology: (1) investigation was carried out to only the manufacturers and traders located in Ban Du, Thasud and Nang Lae Sub-districts of Chiang Rai Province, (2) the employees in such locations are generally lacking of educations, and jobs are on short-term contractual basis, where extra explanation is needed during data collection, (3) questionnaire design is based on short-form IPA format and the definitions of each construct provides the explanation basis, and (4) other aspects such as job satisfaction, job commitment and job loyalty were not considered.

Nevertheless, this research shows that a skillful use of interviews, on iterative basis such as on pre- and post-questionnaire-based survey, can help provide a rich description on the statistical analysis, and clarify the research findings with the managers. Overall, we conclude that a more job-related or organizational-level construct should be linked to organizational level of performance, if one is to

significantly improve the percentage of variance explained. JD-R (Job Demand-Resources) aspect is pointed out, which should be supplemented to the motivation and trust factors, to stimulate higher level of participation and contribute to organizational performance.

Appendix. Questionnaire Items:

Part I – Demographics – not shown.

Part II – TPB Factors in IPA Format

1. Skills of employees – Skills of employees in terms of operational skills including peeling, packing and quality controlling towards workplace.
2. Knowledge of employees – Knowledge refers to a broader and deeper information of employees towards workplace.
3. Career experiences of employees – Career experience refers to employee gaining knowledge through direct observation or participation of workplace.
4. Self-efficacy – Employees are having self-confidence to successfully perform a particular task.
5. Employee relations in the workplace – Employee relations concern about all the aspects of the interrelationship between management and employees.
6. Teamwork – Employee having teamwork means they are working collaboratively in order to achieve a goal.
7. Guidelines for production – The organization is providing advices and concrete guidance on the conceptual process and sharing a common production process.
8. Salary – Salary refers to the payment provided by the employer, received by the employees in return for work performed.
9. Work relaxation – The works provided by the organization have less strict or make the employees feel relax in the workplace.
10. Time requirement to finish the job – The amount of time provided by organization and required to finish the job performed by employees.
11. Transformational leadership – Manager with transformational leadership fosters trust, involvement, and cooperation among team members to ensure they will provide the same standard services to customers.
12. Intrinsic motivation – Employees with intrinsic motivation show interest and enjoyment in the task itself.
13. Extrinsic motivation – Employees with extrinsic motivation who motivated by the outcome of task.
14. Cognitive attitude – Cognitive attitude is when employees have positive beliefs, thoughts, or evaluation towards workplace.
15. Affective attitude – Affective attitude is when employees have positive emotional or feeling towards workplace.
16. Personal norms – Employees with personal norms are those who would feel guilty to perform bad behaviors in the workplace.
17. Subjective norms – Employees acquire a belief and working principle as influenced by other people expectation on them to perform good behaviors.
18. Descriptive norms – Employees acquire a belief and working principle by observing and learning coworkers performing good behaviors in the workplace.
19. Intention – Employees having intentions to do very best in the workplace.
20. Voice behavior – Voice behavior means employees' discretionary behavior of speaking out an ideas, suggestions, or concern about work-related problems with intent to make organizational or unit improvement.
21. Physical behavior – Physical behavior means employees having positive execution or behavior in the workplace.
22. Affectionate behavior – Affectionate behavior means employees having positive feeling in performing good behaviors in the workplace.
23. Trust among colleagues
24. Trust with supervisor

Part III – Performance Level

1. Ideas that employees suggest get recognized and solved.
2. Problems arise are challenged and solved.
3. Employees keeping cleanness of the workplace.
4. Production waste reduction.
5. Process improvement.
6. Product quality improvement.
7. On-time performance.
8. Compliance with rules, regulations and procedures.
9. Employee's feeling towards positive energy.
10. Employee commitment to work.

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THE SPACE DRIVEN STRATEGIC INSIGHT OF THE PINEAPPLE MANUFACTURERS AND TRADERS IN A. MUEANG, CHIANG RAI

NANG HERK LENG PYO, DR. CHAI CHING TAN

Abstract: SPACE tool – standing for Strategic Position and Action Evaluation – is used in relation to the employee-level factors to rationalize the strategy position the pineapple manufacturers and traders should take. A 312 samples set was obtained and used in the analysis. Job resources and job demand, and motivational incentive are shown to relate positively and significantly to the level of perceived competitive advantage, and to a lesser degree, on the financial stability of firms. Thus, the company should stress on organizational factor support i.e. job resources and job demand, as it contributes to workforce's ability to contribute to organizational performance, for strategic positioning advantage. The organizational factor support provides the bases for employees' perceived behavioral control to drive contribution, which aligns and connotes the workability of the theory of planned behavior (TPB). In view of both the internal and external competitive conditions, namely competitive advantage and financial stability, we recommend aggressive strategies for manufacturers and competitive strategy for the traders. Numerous aspects of theoretical contributions, in the aspect of RBV (Resource-based view), and linking employee-level contributions to competitive advantages and strategic postures, are made possible.

Keywords: Competitive advantage, JD-R, organizational performance, RBV, SPACE matrix

Introduction: Without proper and clear strategic position, or long-term measures, the pineapple industry in Chiang Rai will continue to face periodic uncertainty in dealing with oversupply, which often cause prices to drop and farmers suffer. Until now, most measures are short-term basis, i.e. government setups emergency funds [1], and makes use of its institutional structure in the province to purchase pineapples for sales at various department stores and shops [2].

There are many reasons, but mainly due to unorganized or systematic strategic management effort of the industry. Reasons often cited are that there are no local sales or collective points to help distribute the over-supplied pineapples, and further argued that the farmers are required to travel long distances to reach pineapple manufacturers, such as those in the eastern province of Rayong or the province of Prachuap Khiri Khan in the upper southern region. Associated with the far-distance on logistics and lacking of the financial ability of the farmers to hire workers for harvesting, many farmers are forced to leave their pineapples to ripen and rot in the fields. Albeit the inherent weaknesses unresolved, Thailand is still one of the largest producers and exporters of agricultural products that are acceptable to international markets, and pineapple industry is among the leading potentiality [3]. Fig. 1-2 show that pineapples lead other agricultural products exported from Thailand.

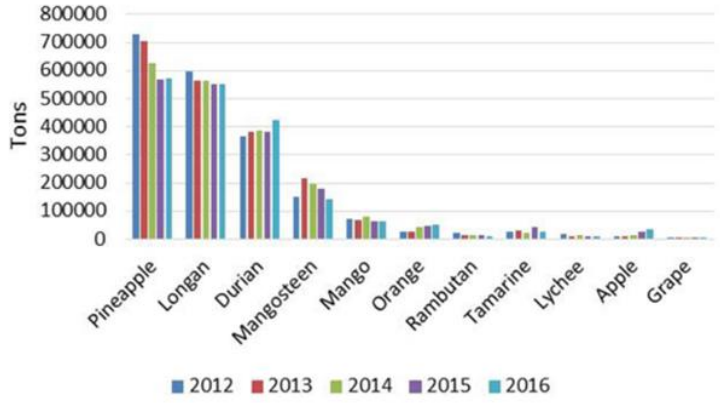


Fig. 1: Export Volume of Fruits in Thailand Source: Reference [4]

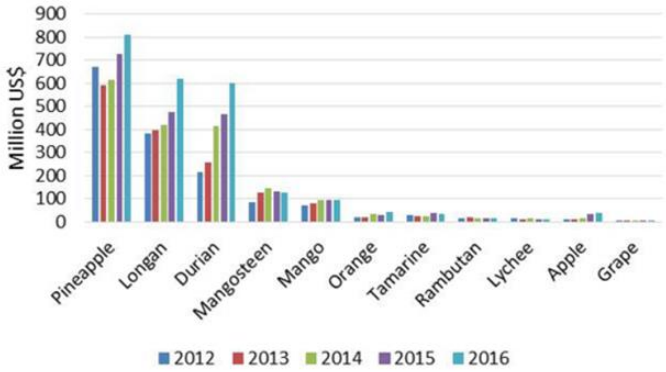


Fig. 2: Export Value of Fruits in Thailand **Source:** Reference [4]

Thailand occupies about fifty per cents of the global market share in the production and export of pineapples [5], mainly contributed by the Southern part of the country [6]. Ranked among the pineapple by-products exported are canned pineapples, at USD 615 million in 2016 [7], followed by juice, frozen and dried pineapples.

The objective of the study is to provide a snapshot of some representative manufacturers and traders of pineapples in A. Mueang of Chiang Rai in terms of their perceived competitiveness states in the industry, and suggest strategy position posture that could help them improve their business performances. Along with this objective, a comparison of their perceptions, in between manufacturers and traders, and their managers and workers, is performed. In addition, a relationship of organizational factors in support of workforce-contributed organizational performance, is examined, which is further linked to the resulting perceived competitiveness states, both internally and externally.

Literature Review: Evidences in both academic publications and the practicing worlds recognize that competition is at the core of the success or failure of any organization [8]. That is, organization develops business strategy in order to compete effectively [9]. Based on the "strategy as positioning" concept, to compete to one's advantage, organization must find a suitable position in the industry. The SPACE – which is a more objective approach of SWOT analysis – is a valuable method guiding organization to formulate a suitable strategic position in the industry to realistically and effectively make use of both internal and external competitiveness and performance conditions. The internal states are determined by: (1) Competitive advantage, (2) Financial stability, and the external states are determined by (1) Industry strength, and (2) Environmental stability, as shown schematically in Fig. 3.

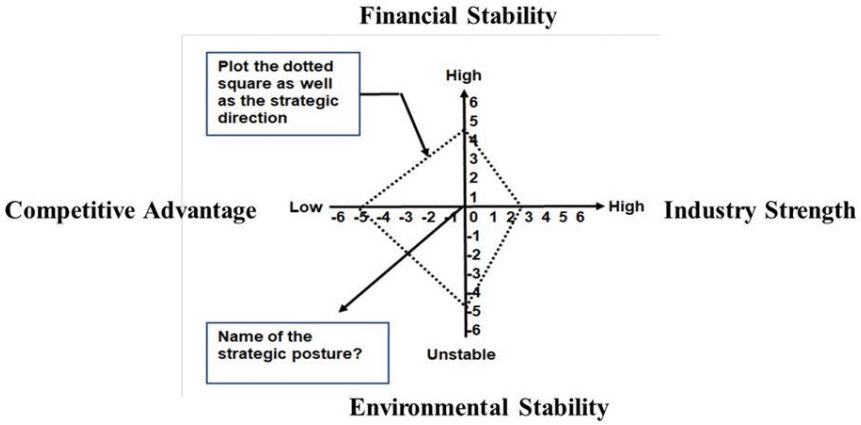


Fig. 3: The SPACE Analysis Framework

Strategic Positioning for Competitive Advantage: Two notable strategic positions for competitive advantage are widely acknowledged, namely price leadership and product differentiation. For product differentiation, company must attempt to identify unique value which the customers are willing to pay. Companies with unique competitive advantage, in that the companies choose product features strategically in response to existing or anticipated actions of competitors [10], can allow them to position competitively or advantageously in brand space uniquely. Companies with cost leadership positioning should demonstrate the ability to realize advantages of cost efficiency and acquire the ability to make use of economic profits [10]. The sources of competitive advantage, according to [11], have to be linked to the activities that pervade the value chain.

In reality, the nature of competitive advantage is beyond cost leadership and differentiation, and could involve product quality, delivery reliability, process flexibility [12] or a host of other factors. In short, competitive advantage demonstrates as anything separating the organization from the others and keeps it alive and growing [13]. Companies need to recognize that competitive advantage can only be developed over long periods of time (i.e. path dependence) [14], such as in how organization trains its employees, and puts to efficient and effective contributions.

Though SPACE matrix concept has been examined and studied in many places, such as in [8], the usage is isolated and independent of other context or variables. If that is so, SPACE usefulness would be very limited, and serves only as SWOT analysis. Thus, this research proposes that employees should be an important basis to contribute to the internal factors of SPACE states of the organization, namely 1) competitive advantage, and 2) financial stability to contribute to the strategy position posture of the organization. In particular, the following theoretical direction, illustrated in Fig. 4, is assumed and to be empirically assessed:

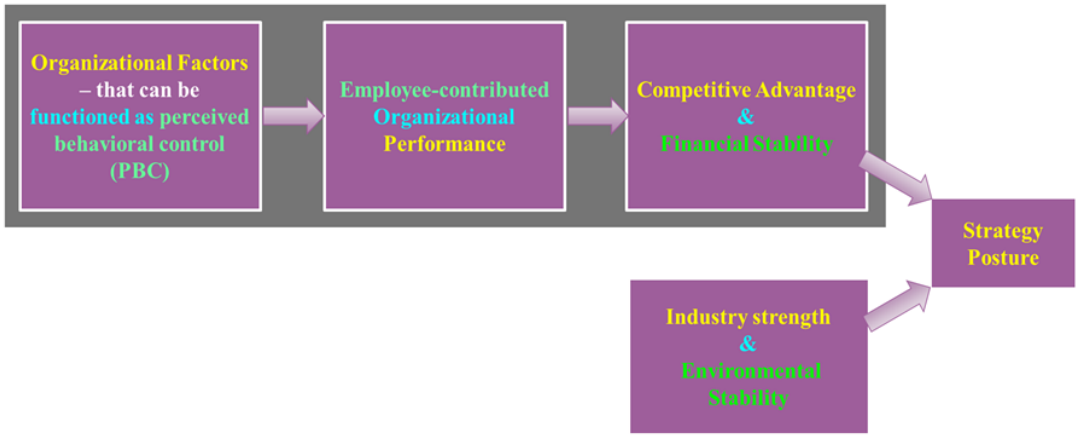


Fig. 4: Theoretical Framework

Note that this framework, if validated with significant differences, statistically, can be another empirical test and example supporting the validity of the resource-based theory of competitive advantage [14]. The performance measures employees-related and contributed organizational performance, and can be used to serve to track the implementation of the business strategies, and to indicate the effectiveness of the strategic position in the industry [15].

Method: Qualitative*:* This study conducts interviews to identify the factors to enrich the understanding according to the theoretical framework that aims to point out the competitiveness states of the business, suggest strategic postures, and to point out how the managerial perceptions of employee work contributions are supportive of the perceived competitiveness states as determined by the SPACE matrix.

Quantitative: This study conducts quantitative approach in order to design and get the managers and employees to fill up the questionnaires for comparative study purpose. The data is analyzed by use of correlations and simple regression analysis, and perceptual gap analysis.

SPACE Analysis: According to [8], SPACE method exploits case study method, by taking the form of qualitative interviews with the managers. SPACE stands for Strategic Position and Action Evaluation, which is one of the strategic management tools that have gained "high reliability for considering macroeconomic, microeconomic and financial factors in the process of determining the position of the organization" [16: 893]. The SPACE matrix is formed of both internal and external dimensions of strategic importance to organization. The internal dimension is described by competitive advantage and financial stability. The external dimension is described by environmental stability and industry strength. The collective assessments of both internal and external dimensions of strategic conditions lead to four possible strategic postures and organization can position itself in its industry: (1) Aggressive, (2) Competitive, (3) Conservative, and (4) Defensive. Aggressive position posture – is typical in an attractive industry (high industry strength) with stable economic conditions. A competitive position posture – is characteristic of an attractive industry (high industry strength) in a relatively unstable environment. Conservative position posture – is distinctive of a low growth but stable market. The focus is on financial stability, while product competitiveness is the critical factor [8: 551]. Defensive position posture – is an unattractive industry where competitiveness is the critical factor [8: 551]. In short, SPACE matrix is used to assess and propose coherency of business strategy in matching both the internal and external environment [17].

Data Analysis and Result: The surveyed demographics are shown in Fig. 5-7, which highlights that 58% are manufacturers, and 42% are traders. There are 5 manufacturers (M) participated, and seven traders (T) participated. Twenty-six per cents are located in Thasud, 30.1% located in Nang Lae, and 43.9% located in Ban Du.

Type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manufacturer	181	58.0	58.0	58.0
	Trader	131	42.0	42.0	100.0
	Total	312	100.0	100.0	

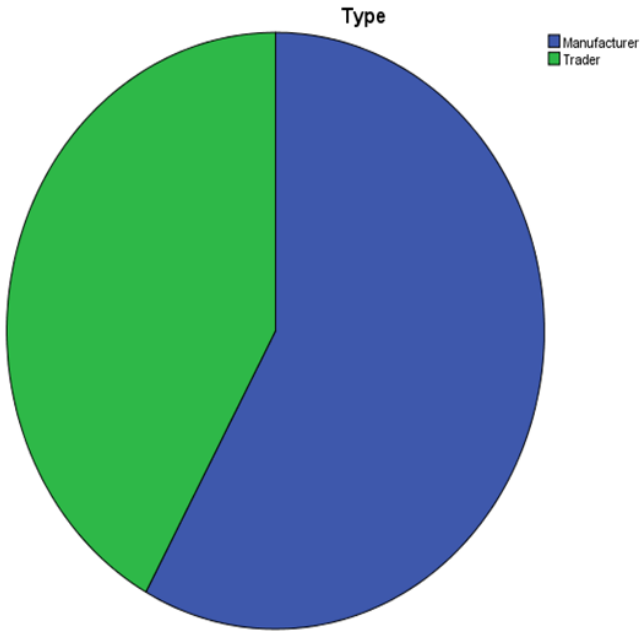


Fig. 5: Demographics – Business Type

Company Code

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	M1	47	15.1	15.1	15.1
	M2	38	12.2	12.2	27.2
	M3	35	11.2	11.2	38.5
	M4	30	9.6	9.6	48.1
	M5	31	9.9	9.9	58.0
	T1	21	6.7	6.7	64.7
	T2	18	5.8	5.8	70.5
	T3	10	3.2	3.2	73.7
	T4	15	4.8	4.8	78.5
	T5	20	6.4	6.4	84.9
	T6	22	7.1	7.1	92.0
	T7	25	8.0	8.0	100.0
	Total	312	100.0	100.0	

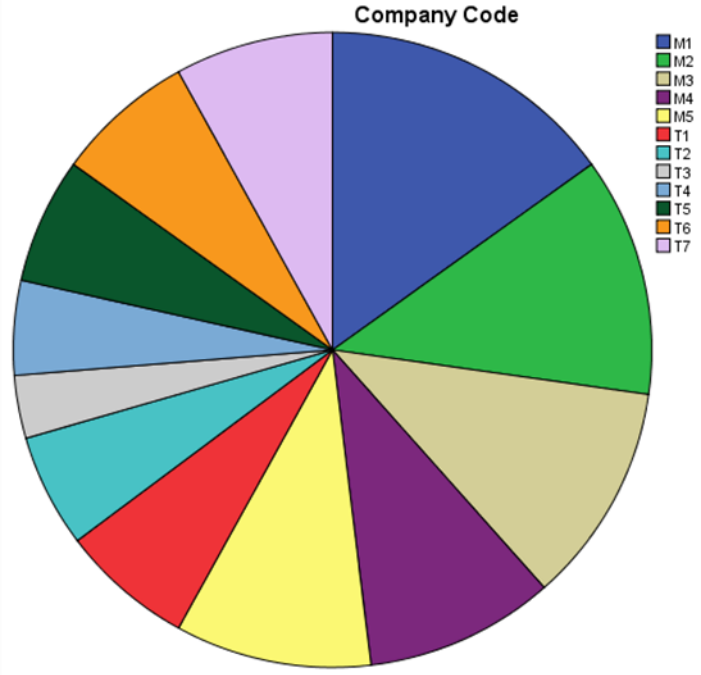


Fig. 6: Demographics – Company Code

Location

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Thasud	81	26.0	26.0	26.0
	Nang Lae	94	30.1	30.1	56.1
	Ban Du	137	43.9	43.9	100.0
	Total	312	100.0	100.0	

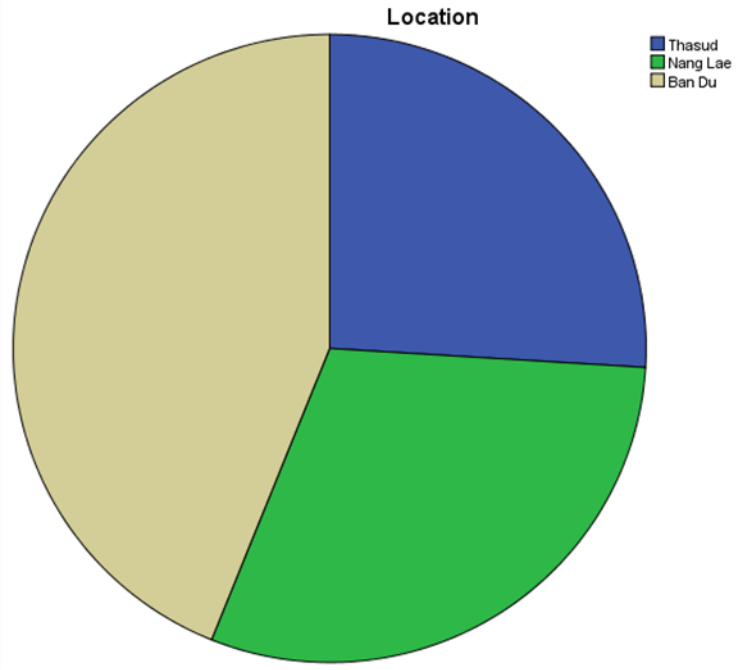


Fig. 7: Demographics Data – Company Location

The interviews lead to the identification of themes "job resources-job demand", and motivation-related organizational factors that the managers perceived important to drive workforce contribution to support organizational performances:

> "Job resources i.e. guideline for production, work condition, supervisory support, and team spirit", "job demand i.e. operations requirement for time to completion," and "motivation i.e. salary." From the theory of planned behavior, the employees would perceive these factors as perceived behavioral control (PBC).

In the aspect of workforce-contributed organizational performance, the managers point out three important aspects, namely:

> Cognitive – in terms of ideas and problem-solving contribution, which is a sort of extra-role and in-role behavioral contribution to the organization.
> Organizational – i.e. process improvement, product quality, on-time delivery.
> Affective – i.e. feeling and job commitment, which is the affective necessity for organizational performance.

The positive relationship between PBCs and the perceived organizational performance is given in Fig. 8.

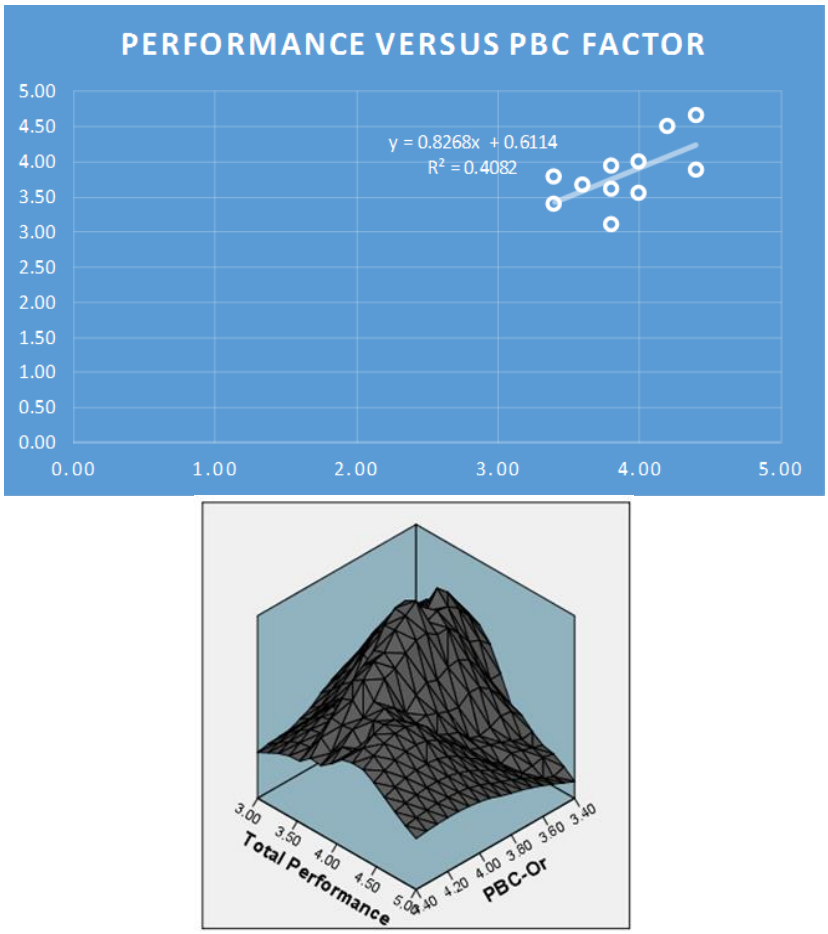


Fig 8: Performance versus Perceived Behaviors Control Factor

The employee-induced performance can directly contribute to improve the competitive advantage and financial stability of the organization, as shown in Fig. 9. Nevertheless, Fig. 9 indicate two obvious clusters, namely the manufacturers and the traders, with the lower level of values corresponding to the traders shown in the front portions of the 3D density plots. The companies with higher perceived competitive advantages also show better financial stability.

Apart from the 3D density plots, the perceptual gaps between the manufacturers (5 of them) and the traders (7 of them), and between the managers (12) and the employees (312) participated in the surveys can also be shown in Fig. 10.

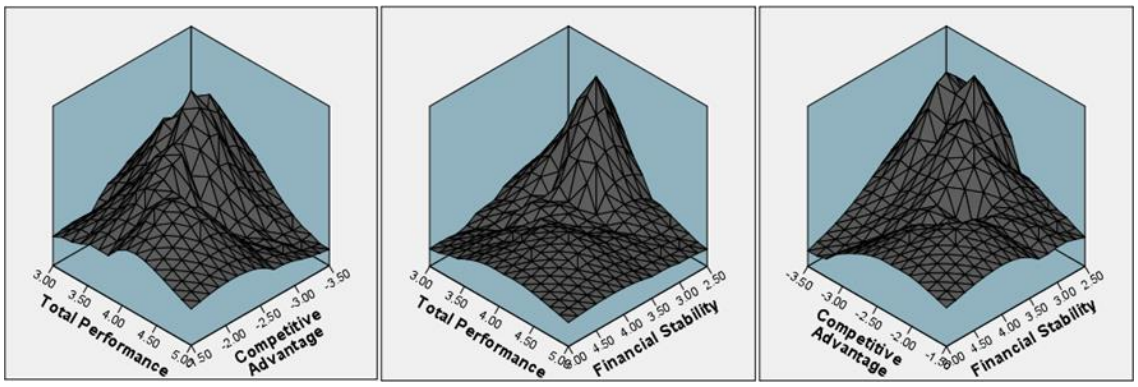


Fig. 9: Linking between Organizational Factors and Performance

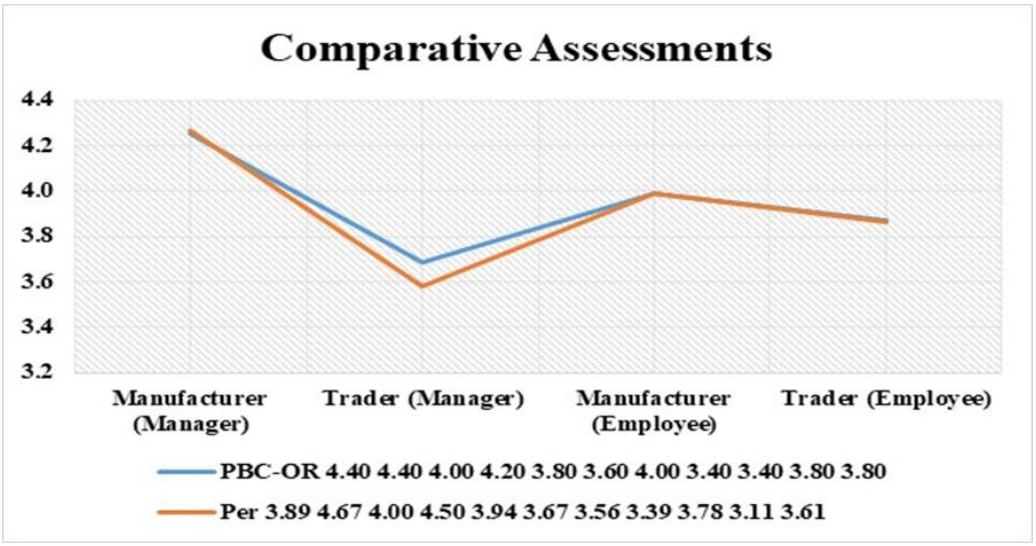
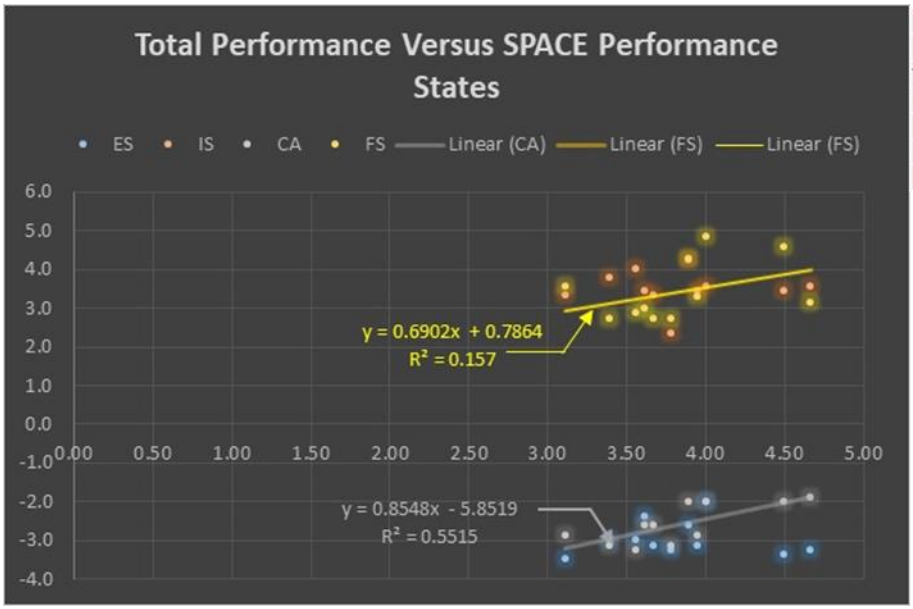


Fig. 10: Perceptual Gaps between Manufacturers and Traders, and between Managers and Employees

We also found that the workforce-contributed organizational performance is shown more able to predict the internal competitive advantage of the company than financial stability. No significant pattern is obvious on the external conditions – both environmental stability and industrial strength, as shown in Fig. 11.



Bivariate Correlations

	Total	CA	FS	ES	IS
Total	1				
CA	0.74	1			
FS	0.40	0.73	1		
ES	-0.01	0.30	0.37	1	
IS	0.01	0.27	0.29	0.32	1

Fig. 11: Simple Regression Analysis and Correlations

In view of the external competitive conditions (industry strength and environmental stability) and the strengths and weaknesses of the pineapple factories (characterized by competitive advantage and financial stability), the SPACE analysis as shown in Table I suggests "aggressive posture" for the manufacturers, and "competitive posture" for the traders. Regarding aggressive posture, we discussed with the managers and recognized their strategies of how they are being aggressive, as follows:

> *"We are expanding our targeted markets, not only to China, but also to Myanmar. Furthermore, we are expanding our product lines such as export not only fresh-cut mini-pineapples but also other*

tropical fruits like mangosteen and durian, making use of the resources we already have or can acquire further." (Manufacturer with aggressive posture)

"We always get in touch with our employees by listening to their suggestions, ideas and problems. And when we see there is something wrong, we correct it immediately, or when their ideas help on, we invest on them to improve our competitiveness i.e. productivity of our process, and quality." (Trader with aggressive posture)

"It is true that we are doing business for profit. But what we do more is that we treat our final customers like we treat ourselves and the person we love or care. What we do should meet the requirement and expectation of our final customers. Thus, we continue to invest on ways to improve our businesses and our products to meet not only our immediate customers but the consumers. Success depends on us investing on our market" (Manufacturer with aggressive posture)

However, there are two traders that are in aggressive posture, and both are trying to become a manufacturer by collaborating with each other (that is: collaborative strategy, in order to implement the competitive strategy, such as to improve financial conditions and competitive advantages). Their opinions on competitive strategies are reflected in the following:

"We know our traders have certain weaknesses, probably lacking of financial resources. Thus, we share our knowledge with them to help them improve their competitive edge."

"When compare we with the manufacturers, we think they are in better advantage, both financially and in certain resources. This motivates us to become a manufacturer, but our financial situation is not strong enough." (Trader with competitive posture)

Thus, we observe that traders are not in aggressive posture in which most of them are having financial instability. The manufacturer positions exhibit the appropriateness for an aggressive strategic posture, and the government policy should support the manufacturers as the factories of fresh-cut mini-pineapples to become more aggressive to have more competitive advantage in Chiang Rai.

Table I: The SPACE Outcome

	ES	IS	CA	FS	CA+FS		IS+CA	FS+ES	Strategic Position
	Average	Average	Average	Average	CA+FS	ES+IS			
	ES	IS	CA	FS					
	-2.6	4.2	-2.0	4.3	5.9	5.4	2.2	1.7	Aggressive Posture
	-3.3	3.6	-1.9	3.1	5.2	4.5	1.7	-0.1	Competitive Posture
	-2.0	3.6	-2.0	4.9	6.3	5.4	1.6	2.9	Aggressive Posture
	-3.4	3.4	-2.0	4.6	6.1	4.3	1.4	1.2	Aggressive Posture
	-3.1	3.4	-2.9	3.3	4.5	4.5	0.6	0.2	Agressive Posture
	-3.1	3.3	-2.6	2.7	4.3	4.4	0.7	-0.4	Competitive Posture
	-3.0	4.0	-3.3	2.9	4.0	5.0	0.8	-0.1	Competitive Posture
	-3.0	3.8	-3.1	2.7	4.0	4.8	0.7	-0.3	Competitive Posture
	-3.3	2.3	-3.1	2.7	4.0	3.6	-0.8	-0.5	Defenisve Posture
	-3.5	3.3	-2.9	3.6	4.7	4.2	0.5	0.1	Aggressive Posture
	-2.4	3.4	-2.6	3.0	4.5	5.0	0.8	0.6	Agressive Posture
Manufacturer	-2.8	3.7	-2.0	4.2			1.7	1.4	Aggressive Posture
Trader	-3.1	3.4	-2.9	3.0			0.5	-0.1	Competitive Posture

Conclusion: The SPACE analysis suggests aggressive posture for the manufacturers, and competitive posture for the traders, based on the systematic planning and implementation of organizational factor

support i.e. job resources and job demand, as they contribute to workforce's ability to support organizational performance, and also the competitive advantage of the firm. The organizational factor support provides the bases for employee perceived behavioral control to drive contribution, which aligns with and connotes the workability of the theory of planned behavior (TPB). The aggressive strategic posture of the manufacturers is underpinned on the SPACE logics that the manufacturers are still in stable economic condition, and the organization should examine to exploit its economic strength to protect and improve its competitive advantage. In addition, the aggressive strategic position should also carefully study its industry and broad environment conditions, and take full advantages of their opportunities. On the other hand, as manifested with a competitive strategic posture, the traders recognize a relatively unstable environment as compared to its upstream value-chain player, namely the manufacturer, including weaknesses financially. Traders with the competitive strategy posture can aim to selectively improve and sharpen its competitive strength, and then invest appropriately to find a slot in the industry and environment for stability.

This research contributes to support the validity and usefulness of resource-based theory of competitive advantage, that is applicable to the pineapple industry [14], which, in this research, the resource is relating to, in particular, the human resource strategy [18]. Due to the positive correlation shown between financial stability and competitive advantage (bivariate coefficient at 0.73** sig. to 0.01 level, 2 tails), financial resource is equally important.

The three organizational performance domains should simultaneously be targeted, as it shows significant contribution to creating competitive advantage, and also certain level of financial stability: namely (1) Cognitive – which is aligned with the concept of in-role and extra-role behaviors, (2) Affective – which manifests job commitment and loyalty, and (3) Organizational – which defines job performance i.e. ability to deliver jobs on-time and up to the standard quality requirement.

Two aspects of theoretical contributions are noted: 1) Theory of job resource-demand can be used to implement perceived behavioral control advocated in the theory of planned behavior, which provides a motivational trust for employee contribution to organizational performance, and 2) Workforce contribution and organizational factor supports should be systematically targeted and invested for contributing to the competitive advantage of the organization.

In the aspect of practical implications, the perceptual and competency gaps between the manufacturers and traders, and between the managers and employees reveal that they should be consciously resolved and considered in strategic management, as this could lead to strategic synergy and sustainable performance.

Limitation: The industry, without the views and actual performance states of the farmers, and the customers, would not be sufficient to provide a realistic and holistic picture of the industry. Thus, further research should incorporate these perspectives to yield a more accurate and valid picture, through informant-based triangulation. This is particularly important especially the most suffered in price-slumped situation is the farmer, which is due to a lack of financial capability to invest on hiring workers for harvesting, and far-distance from manufacturers.

Further Research: Further research can perform a more in-depth questionnaire-based survey by taking into consideration job resources, motivation, job commitment, loyalty, in-role and extra-role behaviors, and job performances. This would provide an objective validation to the theories outlined in this research finding.

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AN EXTENDED STIMULUS-ORGANISM-RESPONSE (S-O-R) THEORY INCORPORATING JD-R FOR STUDYING WORKFORCE DYNAMICS OF THE PINEAPPLE SECTOR IN CHIANG RAI

NANG HERK LENG PYO, DR. CHAI CHING TAN

Abstract: This research is a continuation of two other research efforts of the researchers targeting the same pineapple factory sectors, which extend the works of the theory of planned behavior (TPB) that shifts the prioritization from individuality orientation (i.e. attitudes, subjective norms, and intention) to operational and organizational levels. Explicitly, the job resources and job demand, as advocated in the JD-R theory, and theory of motivation and trust, are extended. Overall, the proposed model depicts an extended configuration of Stimuli-Organism-Response (S-O-R). The S-O-R model was popularly employed to study consumer behaviors, and it was shown SEM (structural equation modeling)-fit, both incremental and absolute, for the workforce study. The S-O-R is not completely distancing itself from TPB as JD-R, trust and motivation do manifest and share the aspects highlighted in constructs such as perceived behavior control (PBC), subjective norms and attitudes, except that the intention is bypassed. The Thai- workforces of both the manufacturers and traders located in Thasud, Ban Du and Nang Lae, processing fresh-cut mini-pineapples, participated in this survey. A total of 96 participated. The survey was conducted in September-October 2019, which is low-production season. The SEM shows perfect fits, evidenced with Normed Fit Index (NFI), Comparative Fit Index (CFI), Tucker Lewis Index all closer to 1.0, and RMSEA at 0.051, and livelihood minimization shows absolute model fit, at p = 0.282, which is p > 0.05, at $\chi^2/2$ = 1.251, much below the 5 threshold.

Keywords: Job Resources-Demand (JD-R), Motivation, OCB, Stimuli-Organism-Response (S-O-R)

Introduction: Thailand is an export-oriented emerging economy, with the majority of the GDP contribution coming from production, contributing 34 per cents of the GDP, while the service sectors occupying around 44 per cents, and agricultural industry at 13 per cents of GDP [1]. Among the agricultural sectors, Pineapple is considered as an important economic crop in Thailand generating incomes for the communities and the nation [2]. Thailand has exported fresh pineapples to China at 81%, Laos 10%, and Singapore 5%. China imports them through Guangdong Province (by sea) and Yunnan Province (by land) as reported from the office of agricultural economics [3]. Two unique pineapple species, Nang Lae and Phu Lae (mini-pineapple) are mostly planted in Chiang Rai. Phu Lae is also registered as a Geographical Indication (GI) of Chiang Rai Province, Thailand [4]. Phu Lae is exported as fresh-cut and mainly to China where such business is done by manufacturers collaborated with traders. Manufacturers manage all the processes needed to be done for the finished goods including ordering and receiving chopped mini-pineapples, managing production process and dealing with customers. Traders need to follow up the requirements provided by the manufacturer. Pineapple workers perform a series of works, such as peeling, packing, cooling down, quality checking, and final packing.

For the fact of a number of customer requirement variations, and the uncertainty caused by traders, it is important employees are motivated, and their productions and functions are aligned to objectives in order to meet the competitive edge and performance requirement. In view of the fact that the pineapple industry is still extensively labor-intensive in Thailand, it is important to study how the workers perceive their job characteristics, in terms of job resources and demands, trust and motivation, and how these job characteristics influence their loyalty, satisfaction, commitment, in-role and extra role behaviors, where these can lead to the better performance of the organization. Therefore, this research aims to develop a model that is capable to organize a set of relevant JD-R (Job Demand-Resources) factors, and motivation and trust which can be absorbed into theory of planned behavior (TPB), as a systematic ordered structure, in order to let the company has the systematic concept to exploit opportunities, especially in efforts to improve organizational performance.

This paper extends the early phases of the researchers' efforts in an attempt to structuralize the employee-level factors to explain organizational performances, and the SPACE competitiveness assessment to suggest possible strategic postures for improving return on investment and competitive advantages. The previous efforts demonstrate that JD-R are important perceived behavioral control factors at the job- and operational level, rather than staying at the individual level which involves attitude and personal norms. In addition, intention has very low degree of ability to explain behaviors and performances, and thus is exempted in this research. Instead, a Stimulus-Organism-Response (S-O-R) model is adapted.

Literature Review: Based on the introductory background, this research is theoretically based on the Stimulus-Organism-Response (S-O-R) theory of consumer behavior [5], which is adapted for studying workforce behaviors. The adapted S-O-R model is shown in Fig.1, which has five hypothetical structures this literature will logically present. Note that the stimulating factors, consisting of JD-R, trust and motivation, do reflect some of the essential characteristic of theory of Planned Behavior (TPB), noted as follows: When the employees perceive that they are equipped sufficiently with the resources that match the demand of the job, they would feel more satisfied and show higher level of job commitment, and further also can induce in-role and extra-role behaviors to contribute to jobs, and be loyal to the company [6], [7].

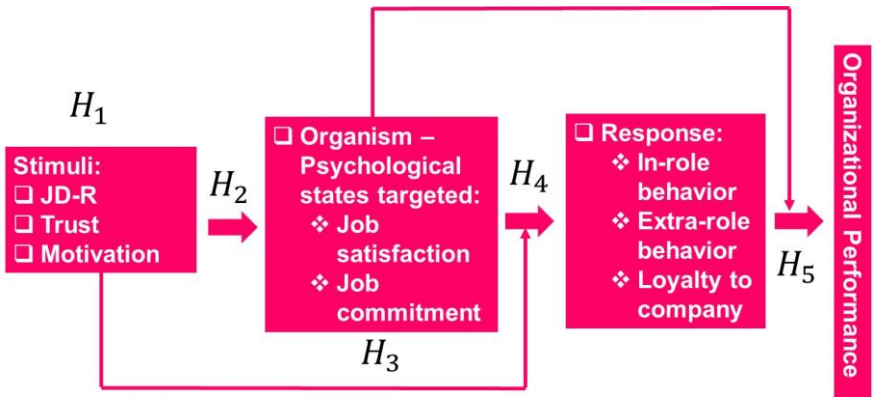

Fig. 1: An Extended S-O-R Conceptual Model

Descriptions of the hypothesis structure:
H1: There is a positive interrelationship of the stimuli factors, consisting of JD-R, trust and motivation.
H2: The stimuli positively influence the organism or psychological states of the employees that are manifested in job satisfaction and job commitment.
H3: There is a positive interrelationship of the organism or psychological states namely between job satisfaction and job commitment.
H4: Both stimuli and organism positively influence the response in terms of combined in-role and extra-role behaviors, and loyalty to company.
H5: Both stimuli and response positively influence organizational performance.
The following sections provide the deductive logics supporting the derivation of H1 to H5.

The Stimuli: Theory of JD-R was comprehensively discussed in [8]. Employees can exploit resources reactively and proactively. Reactively, they simply accept the resources as the given that makes them satisfied and show commitment. Proactively, engaged workers can mobilize their own job resources to stay engaged [8], that is: JD-R not only stimulates the employees to trust, and motivated to perform better, but also to have in-role and extra-role work engagement influences, including loyalty. This asserts the hypothesis structure shown in H1 and H4. The partial contribution of H4 due to JD-R is also supported empirically in that the different nature of job resources and demand can lead to different level of impact on both in-role and extra-role work engagement behaviors [9]. Examples of job resources

can include, for instance, social support [9], supervisory support and managerial couching, which induce trust and confidences [10], [11], and also can include personal resources [12] as manifested in TPB.

Apart from JD-R and trust, as stated above, employee motivation is an important stimulating factor influencing the organistic or psychological state of employees. It is reported that those who are more motivated, intrinsically and extrinsically, with their jobs, are more satisfied with their organizations and are committed (see H2), partly contributable to the intrinsic job interests [13]. Also, with trust, the employees also show higher level of motivation, leading to more job satisfaction, job commitment, loyalty to company, and in-role and extra-role behavioral efforts [6], [7].

Organism or Psychological States: Job commitment and job satisfaction are the two states of organism considered. Job satisfaction is commonly defined as "the pleasurable or positive emotional state resulting from the appraisal of one's job or job experience" [14], which can be related to also meeting certain expectation such as expectation of job resources and demand (JD-R), and the trust associated with the relationship with supervisors and colleagues. This supports the H2 logic demonstrated.

In addition, when employees are more satisfied with their jobs, they will show more commitment, and also contributes extra effort on jobs [15], supporting the internal states structure stated in H3 and the O→ R structure of H4. In other words, satisfied employees would form stronger belief in their job roles (demonstrated in job commitment, as stated in hypothesis H3) and show a more willingness to exert considerable effort (both in-role and extra-role behaviors), and a strong desire to maintain membership (loyalty to company) as shown in the stated hypothesis H4.

Responses and Organizational Performance: Two important responses are loyalty to company and in-role and extra-role behaviors. The latter behavioral terms are coined in OCB, standing for organizational citizenship behaviors. The term OCB was first introduced by Dennis Organ and his colleagues in early 1980s [16], and is defined as "Individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promote the effective functioning of the organization" (p. 5), namely the performances of the organization. This logic extends the previous hypothetical structures to H5, as shown in the theoretical S-O-R model in Figure 1. In other words, organizational performance is attributable to how an employee behaves, both in-role and extra-role, and also to factors such as the organism or internal psychological states as job commitment and job satisfaction, which further supports the hypothetical logic H5. In a similar vein, employees' organizational citizenship behavior (OCB) supports the effective functioning of an organization, especially the extra-role plays significant role as managers cannot anticipate all scenarios in the workplaces, and thus, magnifying the extra-role of the employee help and proactiveness [17].

Now that the logical and deductive logics supported by the available literature are discussed, the next section would present the research method.

Methods: Questionnaire Design: The questionnaires were designed using the empirically proven knowledge and theories of JD-R [8], TPB [18], and adapting the measurement instruments of job satisfaction, job commitment, employees' behaviors, and organizational performance [6], [7], [15], [16], [19]. Validity and reliability of the constructs are established by means of aligning the constructs to the context of the theories i.e. TPB, JD-R, psychological states targeted, behaviors and organizational performance, the definition of the construct, with applicability to the factory context of this study. Pilot tests were conducted ensuring the measurement is fit for use, by combining the consensus and insights of the subject experts in both research methodology and HRM, as well as the view of the managers from both the manufacturers and the traders. A consistent response pattern of the informants provides a basis for validity and reliability of the constructs. The validity and reliability assessments of the measurement instrument are also discussed in the "data analysis and result" section.

Data Collection: To test the hypotheses, we gathered data from a sample of factory labor workforces. Understanding them is important as the factory operations are labor-intensive. For reliability in responses, only long-term Thai workforces were engaged. In other words, this research purposively excludes the part-timers and short-term contractual workers as they are mostly non-Thai, with deficiency in English and Thai. Thus, translating the questionnaire statements to them will significantly weaken the reliability and validity. This exclusion is also agreed upon by the managers of both the manufacturers and traders. Specifically, among from the target population of nine manufacturers and twenty traders, the sampling covered five manufacturers and seven traders and 96 valid responses are collected. Table I presents the response rate in view of the current manufacturers and traders in the three targeted locations. The choice was made conveniently but aimed to have a uniform share between manufacturers and traders located in only Mueang Chiang Rai under three sub-districts namely; Thasud, Ban Du and Nang Lae. Data collection was carried out through personally administered questionnaire survey. Data collection was conducted during August to September 2019, which is actually low-production periods. The survey was fully supported by the manager of each respective manufacturer or trader. The first part of the questionnaire survey relates to the demographic profile of the participant, and the second part relates to the theoretical contents of this research. Response scale for the second part are five Likert scale spanning from "strongly disagreed" to "strongly agreed".

Table I: Population and the Participants

Targeted Area	**Thasud**		**Ban Du**		**Nang Lae**		**Total**
	M	*T*	*M*	*T*	*M*	*T*	
Targeted population							
Existing factories	2	12	5	14	4	15	52
Closed factories during low-production season	0	6	1	8	1	7	23
Available factories	2	6	4	6	3	8	29
Sampling/Participated							
Factories willing to participate	1	2	3	2	1	3	12
Distributed questionnaires	10	10	30	10	10	15	85
Collected questionnaires	14	10	27	11	12	22	96
Valid Response Set at 96 Notes: *"M"* refers to Manufacturer and *"T"* refers to Trader							

Data Analysis and Result: Data analysis is divided into two parts; 1) analysis of the validity and reliability of the measurement instrument, and 2) analysis of the structural model – the fitness and the explanatory power reflected in percentage explained in the variance of the corresponding dependent variable, and the path coefficients to judge the supportability of the stated hypotheses.

Descriptive Profile and Cross-Comparative Analysis: Data were collected from 12 pineapple factories located in Thasud, Nang Lae, and Ban Du sub-districts of Mueang Chiang Rai District. The color-coded highlights the areas of significant differences by means of either ANOVA or t-tests, stated in the following.

Comparing the locations, Nang Lae's workforces show higher level of perceptions of all the constructs studied, at consistently mean value above 4 of the five Likert scale. The profiles shown in Table II can visually infer that lower job resources, trust and motivation are significant factors causing the lower level of perceptual values for both Thasud and Ban Du.

Table II: Demographic Data of the Respondents

Descriptive	Frequency	Percentage	Job Demand	Resource	Trust	Motivation	Commitment	Commitment to Comm	Behaviors	Satisfaction	Personal Pe
Company Type											
Manufacturer	63	65.6	4.175	4.022	4.021	4.096	4.376	4.164	4.314	4.068	4.355
Trader	33	34.4	3.919	3.830	4.232	3.828	4.060	3.920	3.882	3.866	4.273
(t,df)			(1.971,94)			(2.024, 94)			(4.452, 94)		
Sig. (2-tailed)			0.052			0.011			0.000		
Company Location											
Thasud	21	21.9	4.081	3.743	3.714	3.789	4.222	3.841	4.253	3.812	4.319
Nang Lae	64	66.7	4.156	4.088	4.250	4.139	4.339	4.229	4.212	4.125	4.380
Ban Du	11	11.5	3.695	3.600	3.909	3.628	3.940	3.667	3.732	3.616	4.030
(F, df1, df2)			(3.415,2,93)	(5.605, 2,93)	(5.129, 2,93)			(5.207, 2,93)	(5.287, 2,93)	(4.409, 2,93)	
Sig. (2-tailed)			0.037	0.005	0.008			0.007	0.007	0.015	
Gender											
Male	24	25.0	3.792	4.050	4.222	4.035	4.193	4.001	4.134	4.075	4.305
Female	72	75.0	4.185	3.925	4.051	3.994	4.292	4.107	4.176	3.973	4.334
(t,df)			(-2.8,94)								
Sig. (2-tailed)			0.006								
Age											
Less than 20	16	16.7	4.208	4.000	4.374	3.931	4.168	4.044	3.833	3.871	4.271
20 to 30	43	44.8	3.937	3.805	4.000	3.897	4.116	3.907	4.119	3.906	4.318
More than 30	37	38.5	4.208	4.114	4.081	4.160	4.487	4.297	4.365	4.161	4.361
(F, df1, df2)							(4.626,2, 93)	(3.419, 2,93)	(7.808, 2,93)		
Sig. (2-tailed)							0.012	0.037	0.001		
Designation											
Peeler	31	32.3	4.130	4.013	3.882	4.016	4.205	4.118	4.257	3.930	4.269
Packer	49	51.0	4.013	3.910	4.204	3.940	4.347	4.076	4.121	3.992	4.374
Production Service	9	9.4	4.112	4.156	4.334	4.323	4.258	4.186	4.273	4.362	4.482
QC (Quality controller)	7	7.3	4.380	3.771	3.950	3.986	3.999	3.810	3.936	3.877	4.047
Work experience											
Less than 1 year	53	55.2	3.962	3.770	3.955	3.918	4.189	3.956	4.046	3.807	4.264
1-2 years	29	30.2	4.069	4.097	4.253	4.060	4.253	4.139	4.286	4.179	4.358
More than 2 years	14	14.6	4.596	4.371	4.286	4.214	4.596	4.429	4.373	4.349	4.499
(F, df1, df2)			(6.615,2,93)	(4.914, 2,93)			(2.800,2, 93)	(2.893, 2,93)	(3.867, 2,93)	(6.294, 2,93)	
Sig. (2-tailed)			0.002	0.009			0.066	0.060	0.024	0.003	
Starting working time											
Earlier than 8 AM	38	39.6	4.255	4.147	4.045	4.151	4.352	4.219	4.308	4.098	4.255
Between 8-10 AM	56	58.3	3.958	3.836	4.130	3.916	4.202	3.959	4.074	3.951	4.375
Later than 10 AM	2	2.1	4.500	3.700	4.000	3.670	4.500	4.835	4.045	3.440	4.335
(F, df1, df2)			(3.259,2,93)					(2.998, 2,93)			
Sig. (2-tailed)			0.043					0.055			
Average working hours											
Less than 8 hours	2	2.1	4.000	3.500	3.665	3.500	3.665	3.500	3.875	3.625	4.500
8 to 10 hours	69	71.9	3.981	4.032	4.106	4.044	4.314	4.063	4.235	4.105	4.309
More than 10 hours	25	26.0	4.386	3.784	4.093	3.933	4.187	4.174	3.999	3.733	4.360
(F, df1, df2)			(4.304,2,93)							(3.664,2 ,93)	
Sig. (2-tailed)			0.016							0.029	
Living Area											
Near (Within 5 km)	47	49.0	4.120	4.000	4.092	4.133	4.312	4.170	4.249	4.050	4.334
Far (More than 5 km)	49	51.0	4.055	3.914	4.095	3.881	4.225	3.993	4.086	3.949	4.320
(t, df)						(2.003, 94)					
Sig. (2-tailed)						0.048					

The female workforces felt jobs more demanded with lower matching of job resources, which are opposite to the male counterparts. Also, the older the workers, the job commitment and loyalty, and thus, the collective in-role and extra-role behaviors also stand higher. This phenomenon also applies to work experience duration – that is, the workers with longer years of the pineapple production experiences state higher for the constructs studied. In this way, the companies may have to take this factor into consideration, and gradually develops them to have strategic alignment and loyalty to the organizations.

An interesting weakness is found for the workforce starting work in between 8-10 AM. While the longer work hours can cause stressful states of the workers, Table II shows that, with the appropriate job resources provided and the trusts fostered with the colleagues and supervisors, the situation can be cushioned. The workers who live further away show less motivated, but its impact to other factors are negligible. Comparing the company type, the employees of the manufacturers perceive higher job demanded when compared to the traders, such as the jobs need to pay high concentration, is very exhaustive, and with higher work load. Nevertheless, the manufacturer groups also show higher level of motivation and higher level of in-role and extra-role behaviors, partly could be attributable to higher level of matching job resources, and higher motivation.

Validity and Reliability Assessments: Prior to the SEM path analysis, quality assessment of the constructs is needed. What is not reliable can't be the base for validity. All the constructs met the 0.7 minimum threshold of the Cronbach's Alpha reliability as shown in Table III. Based on the five agreeable Likert scale measurement, majority of the responses state above 4.0 scale, with minor weaknesses located in job resources.

Table III: Factor and Reliability Analyses of Each Construct

Constructs	Mean	Std. Dev.	Alpha	KMO	TVE	$\sqrt{TVE}$
Job Demand	4.087	0.614	0.752	0.683	0.670	0.818
Job Resource	3.956	0.729	0.887	0.865	0.696	0.834
Trust	4.094	0.697	0.777	0.650	0.695	0.833
Motivation	4.004	0.626	0.775	0.726	0.764	0.875
Job Commitment	4.268	0.585	0.773	0.675	0.694	0.833
Loyalty to Company	4.080	0.686	0.780	0.684	0.700	0.837
Behaviors	4.166	0.494	0.756	0.698	0.664	0.815
Job Satisfaction	3.998	0.639	0.888	0.864	0.582	0.763
Organizational Performance	4.327	0.491	0.772	0.698	0.687	0.829
Factor Loading: All > 0.7 Criterion for divergent: The diagonal must be higher than the cross-correlations coefficients						

With the square-root of TVE for each of the construct shown exceeding the cross-correlations terms in Table IV, divergent validity is established.

Table IV: Correlations Analysis

Constructs	JD	JR	T	M	JC	LtC	B	JS	OP
Job Demand (JD)	1								
Job Resource (JR)	.530**	1							
Trust (T)	.456**	.717**	1						
Motivation (M)	.494**	.797**	.724**	1					
Job Commitment (JC)	.450**	.590**	.644**	.725**	1				
Loyalty to Company (LtC)	.528**	.672**	.688**	.768**	.800**	1			
Behaviors (B)	.470**	.599**	.435**	.661**	.646**	.602**	1		
Job Satisfaction (JS)	.404**	.833**	.767**	.850**	.716**	.739**	.652**	1	
Organizational Performance (OP)	.394**	.611**	.565**	.635**	.680**	.623**	.572**	.615**	1
. Correlation is significant at the 0.01 level (2-tailed). Correlations Coefficients are significant at the 0.01 level (2-tailed)									

With the total variance explained (TVE) exceeding 0.50, factor loading well above 0.70 for each measurement item of the construct, convergent validity is established.

Table V: Factor Loading

Constructs	**Items**	**Cronbach's Alpha**	**Factor Loading**	**Mean**	**Standard Deviation**
Stimulus:					
JD-R					
Job Demand	The job needs me to pay high concentration.	0.752	0.844	3.938	0.765
	The job is very exhaustive.		0.825	4.375	0.715
	The job has high work load.		0.785	3.948	0.773
Job Resource	The job is fully supervised by supervisor.	0.887	0.858	3.750	0.962
	The working environment is safe to get the job well done.		0.865	3.875	0.757
	Equipment needed to get the job done is always available in good quality.		0.870	4.083	0.948
	Time provided to get the job done is adequate.		0.810	4.031	0.787
	Team work is adequate to get the job done in good quality.		0.764	4.042	0.917
Trust	Trust among colleagues is good.	0.777	0.760	4.125	0.798
	Trust with supervisor is good.		0.843	4.052	0.899
	Overall, there is good trust atmosphere in this company.		0.892	4.104	0.814
Motivation					
Extrinsic Motivation	The job provides good financial incentive to motivate me.	0.755	0.898	3.656	1.074
	The company's policy is attractive to motivate me to work hard.		0.898	3.729	0.946
Intrinsic Motivation	I feel satisfied when I finish my job on time.	0.729	0.894	4.323	0.571
	I feel happy to be able to get a job done with the team.		0.712	4.250	0.616
	I feel happy to be able to get a job done in good quality.		0.819	4.375	0.700
Organism:					
Job Satisfaction	I am satisfied with overall job situation	0.888	0.761	4.094	0.650
	I am satisfied with company policy.		0.852	3.875	0.798
	I am satisfied with safety working environment.		0.824	3.917	0.842
	I am satisfied with relationship with supervisor.		0.675	4.052	0.999
	I am satisfied with relations with colleagues.		0.676	4.146	0.740

	I am satisfied with pay.		0.776	3.823	1.142
	I am satisfied with ethics of the company.		0.806	3.990	0.718
	I have work happiness.		0.710	4.073	0.837
Job Commitment	I am willing to do what I can to get the job done well.		0.817	4.490	0.598
	I am willing to do other additional job for benefiting this company.	0.773	0.878	4.177	0.725
	I am willing to work extra time to benefit the company.		0.802	4.135	0.776
Response:					
In-Role Behavior	I do not waste time on job.		0.768	3.740	0.997
	I do not waste resources on job.	0.793	0.875	4.094	0.872
	I always deliver to job requirement.		0.895	4.000	0.821
Extra-Role Behavior	I am willing to help other when they are in need.		0.748	4.375	0.528
	I am sincere to co-worker.		0.689	4.438	0.595
	I am always willing to share idea with the company	0.753	0.815	4.375	0.585
	I am always willing to train new comers.		0.780	4.354	0.632
Loyalty to Company	I am proud to tell others about this company.		0.873	4.031	0.900
	I would continue on this job for quite a long time.	0.780	0.792	3.927	0.849
	I am willing to put in extra effort to deliver the job assignment on time.		0.843	4.281	0.706
Organizational Performance					
Job Performance	We often can finish our assigned job on time.		0.842	4.313	0.586
	Our works meet the quality standard of our company.	0.772	0.829	4.250	0.598
	Our works meet the quality standard of our customer.		0.816	4.417	0.592

Hypothesis testing: The correlations result in Table IV provides a support for the first hypothesis relationship stated in H1. The other hypotheses are shown to be supported in Table VI and by the structural path model given in Fig. 2.

Table VI: Hypothesis Supporting Details

Dependent Variable	Independent Variable	Beta	t-value	Sig.	Hypothesis	Result
Organizational Performance $R^2 = 0.51$	Job Commitment	0.37	2.817	0.006	H_5	Support
	Loyalty to Company	0.11	0.799	0.426	H_5	
	Behaviors (OCB)	0.16	1.542	0.126	H_5	
	Job Satisfaction	0.17	0.166	0.172	H_5	
Job Commitment $R^2 = 0.60$	Job Resource	-0.27	-2.030	0.045	H_2	Support
	Job Demand	0.16	1.956	0.054	H_2	
	Trust	0.16	1.463	0.147	H_2	

	Motivation	0.38	2.743	0.007	H_2	
	Job Satisfaction	0.44	2.783	0.007	H_3	
Loyalty to Company $R^2 = 0.74$	Job Resource	0.02	0.179	0.858	H_4	Support
	Job Demand	0.13	1.880	0.063	H_4	
	Trust	0.10	1.165	0.247	H_4	
	Motivation	0.21	1.851	0.067	H_4	
	Job Commitment	0.44	5.155	0.000	H_4	
	Job Satisfaction	0.09	0.698	0.487	H_4	
OCB $R^2 = 0.57$	Job Resource	0.10	0.704	0.483	H_4	Support
	Job Demand	0.18	2.132	0.036	H_4	
	Trust	-0.35	-3.098	0.003	H_4	
	Motivation	0.21	1.404	0.164	H_4	
	Job Commitment	0.33	3.003	0.003	H_4	
	Job Satisfaction	0.35	2.083	0.040	H_4	
Job Satisfaction $R^2 = 0.82$	Job Resource	0.38	4.766	0.000	H_2	Support
	Job Demand	-0.12	-2.261	0.026	H_2	
	Trust	0.23	3.357	0.001	H_2	
	Motivation	0.44	5.466	0.000	H_2	

The structural path model in Figure 2 reveals a satisfactory fit to the data, with the model fit statistics shown in Table VII, with χ^2= 6.257, χ^2/df = 1.251, p > 0.005 (which signifies significant absolute model fit by the livelihood function), and other indexes such as NFI = 0.992, RFI = 0.939, IFI = 0.998, CIF = 0.998, and RMSEA = 0.051 all conform to the threshold requirements for incremental and absolute fits [20].

The ability to explain each of the dependent variable in each of the Hypotheses are ranged in between 0.50 to 0.80, which signifies the significant ability of the model to explain the relevant phenomena.

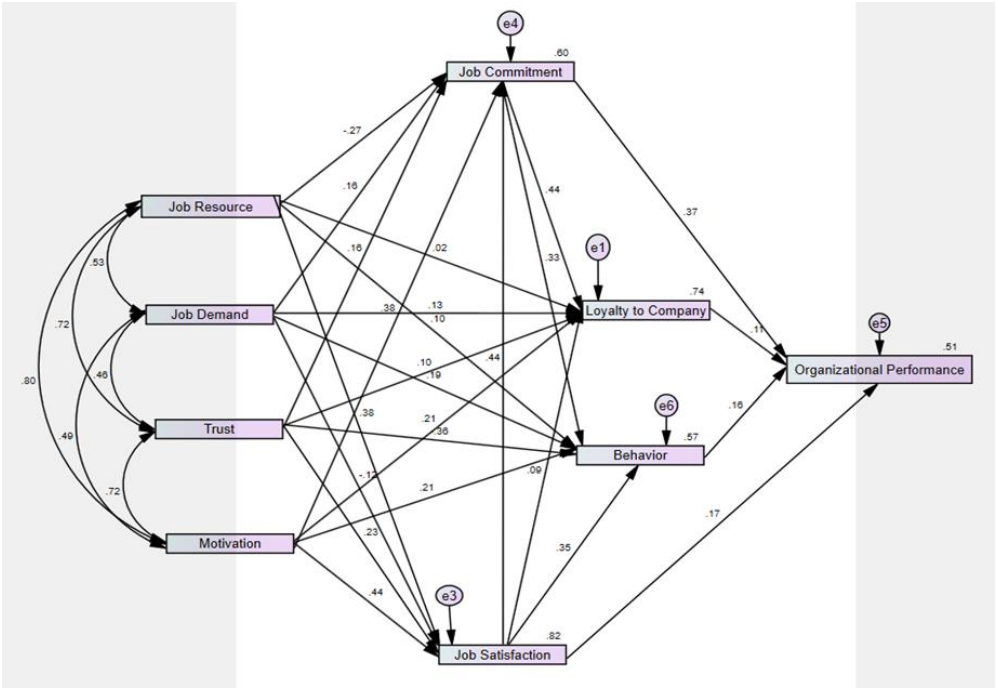

Fig. 2: The Validated Structure Equation Model

Table VII below presents the SEM fit statistics, surpassing all the requirements for a good model fit.

Table VII: Model Fit Statistics

CMIN					
Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	49	6.257	5	.282	1.251
Saturated model	54	.000	0		
Independence model	18	743.894	36	.000	20.664
Baseline Comparisons					
Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default Model	.992	.939	.998	.987	.998
Saturated Model	1.000		1.000		1.000
Independence Model	.000	.000	.000	.000	.000
RMSEA					
Model	RMSEA	LO 90	HI 90	PCLOSE	
Default Model	.051	.000	.158	.412	
Independence Model	.455	.427	.484	.000	

Conclusion: The Job Demand-Resources (JD-R) theory was empirically shown supported, along with motivation and trust to colleagues and supervisors, to influence the organism or internal psychological states of the employees. The model proposed and SEM-tested to fit demonstrates an extended S-O-R (Stimuli-Organism-Response) paradigm in working. The S-O-R was popularly used to study consumer behaviors [5] and community behaviors towards a common purpose such as to establish a community-based tourism (CBT). This research demonstrates that S-O-R is equally suitable for studying workforce behaviors and their contributions to organizational performances. The SEM is laid out in a way to allow the studying of the mediator effect of organism and the response factors to organizational performance. It concludes that organism plays a mediating role, at least partially, to leverage the stimulating factors such as JD-R, motivation and trust. And, both loyalty and behavioral responses are also playing the mediating role in leveraging the relationship between organism and organizational performance.

There are also practical implications demonstrated by the ANOVA and T-tests, which outlines a need of the companies to allocate budgets on human resource development and management (HRD, HRM) for the workforces, especially those who just join, with work experiences less than one year. Those who work longer hours feel the higher demand stresses, and the organizations should ensure appropriate job resources are matched so as to not negatively influence the organismic states of the employees, which can cause lower level of in-role and extra-role behaviors for organizational level of contributions. The companies should also pay more attention to female workforces, as they show higher level of job demand with lower job resources matched, which causes lower level of job satisfaction and motivation.

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A COMMUNITY-BASED CASE STUDY OF SUSTAINABILITY-MISSIONED SPECIATY COFFEE FARMING BUSINESS PRACTICE: A SOFT-SYSTEMS METHODOLOGY (SSM) GUIDE

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Abstract: This research starts by acknowledging a practical and theoretical need to fill a gap of the extant literature, in that the community-based case study of coffee farming business in Thailand is something not academically reported. Due to the relatively unreported phenomenon, this research exploits the proven feature of soft systems methodology (SSM) to case research method, and under the interpretative paradigm, to develop a theoretical framework, based on BSC and strategy mapping, in order to narrate and explain how a community member is successful in implementing a sustainability-driven coffee-farming business. SSM provides a guide to systematically identify the root definition based on CATWOE, which can be reckoned as the protocol for the case inquiry, to prompt inquiries, themes identification and conceptual model development. Themes identified fit with the Balanced Scorecard (BSC) and its structured strategy mapping concepts, but this paper extends by adapting a value-and-principle based motivator to simulate learning and growth, and drives the rest of the sustainability and CSV (Creating Shared Value) efforts. Three domains of contributions are discussed in this paper, namely theoretically, methodologically, and practically. Marketing mix presented in 10P logics is discovered and logically explained.

Keywords: Balanced Scorecard, Community, Soft Systems Methodology (SSM), Specialty Coffee Farming, Strategy Map, Sustainability.

Introduction: Community-based case study of coffee *farming business* in Thailand is something not academically reported. An outline of the current states of knowledge available in the extant literature is presented to guide and rationalize how this article is to be organized and approached.

First of all, whether we approach from a commercial perspective, or socio-cultural, or ecological perspective, sustainability is a theme for a business, or in particular, a community-based business to sustain its viability. To improve the viability of coffee farming business, researchers and practitioners have shown it is important to focus by integrating a multitude of factors normatively based on some proven principles or theories [1], while it is also equally important to derive monitoring and management system, and cultivate the ability to counteract emerging trends and risks. Obvious potential risk factors include climate change, population pressure, low yields of crops, and coffee price volatility [2].

Community-based cases are of much complication, which involve not only agricultural sustainability issues, but also human activities that traditionally carry various social connotations and localized socio-cultural norms. To tackle socio-technical problem, [3] recommends approaches from a soft system methodology rather than hard systems methodology – that is, to approach using systems oriented problem-solving and research technique with a soft-methodological emphasis. While the latter – hard systems methodology i.e. engineering optimization – is based upon a paradigm of optimization that is modeled on the natural scientific method, the former – *soft systems methodology (SSM)* – embraces a paradigm of learning and also needs to concern the socio-cultural connections forged upon from the meanings attributed to a group, and the member of the community. In reality, there is no contradiction to both hard and soft systems methodologies, and the only fact is that the soft systems methodology (SSM) acknowledges the ill-structure of the issue and it gears toward "relationship-maintaining", is more human behavior oriented, and emphasizes on what we ought to do and on participation and learning [4]. Ill-structured context is highly suitable for case research approach, which can rely on in-depth interviews, documentary reviews and field observations, to provide rich descriptions, to explore issues or phenomena not easily discussed in the published literature, and to explain the phenomenon in both

surface and deep level [5]. Both SSM and case research method are highly suitable to ill-structured research issues and problems, and each has its distinctive advantages, and both can be approach from an interpretative paradigm (rather than positivistic paradigm). No publications to the acknowledgement of the authors on combining both SSM and case method, and this becomes another contributory entry-point of this research, by using the SSM guidelines, especially the CATWOE root definition to provide a rule- and fact-based protocol for the case method to bring to the fields and collect the data to synthesize out a conceptual or theoretical model that reflects the reality to meet the research objective.

The steps involved in SSM, which takes root in interpretative paradigm, in order to understand and tackle issues such as sustainability-targeted coffee farming, are given in Fig. 1.

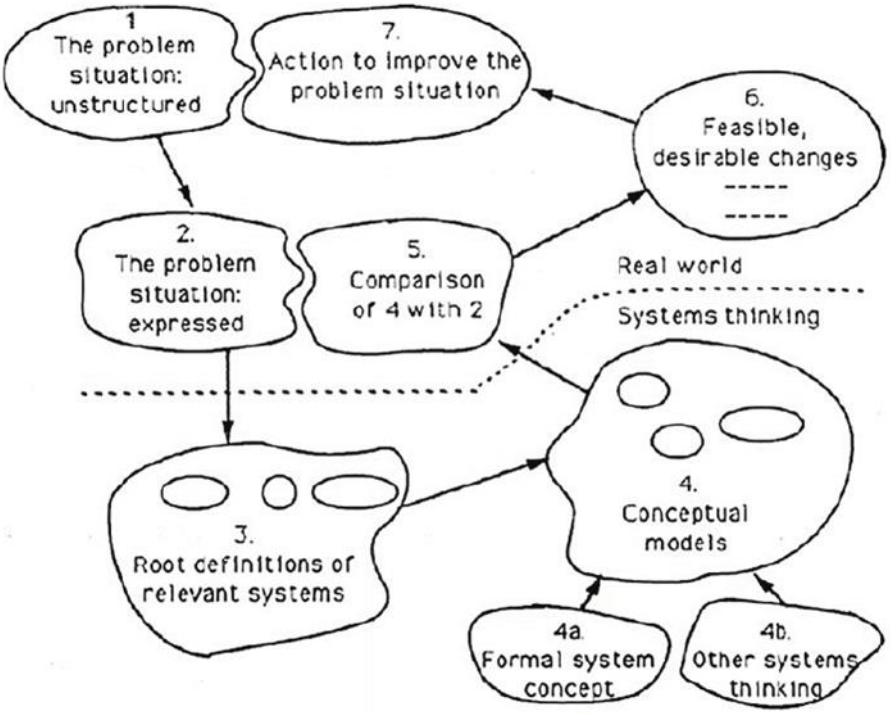

Fig. 1: The Learning Cycle of Soft Systems Methodology (Adapted from [6]).

In the first and second stages of the SSM, a problem situation is entered and expressed – which relates to a sustainability need and viability of specialty, nature-based coffee farming business. The third activity, as shown in Figure 1, involves choosing relevant human activity systems that offers insight into the problem situation, which is enabled by a well-defined root definition by giving consideration to all the elements brought to mind by the mnemonic CATWOE:

- Customers
- Actors
- Transformation process
- Weltanschauung
- Owners
- Environmental constraints

From a research methodological perspective, CATWOE stands to broaden the considerations of relevant informants, including constraints and the case context, so that the case research procedure would lead to more valid finding and conclusion. The informant-inclusive root definition leads the researcher to conceptualize the systems model that describes the case issue. The conceptual model in Figure 1 would also need to be checked with the informants to ensure that they are not fundamentally deficient [4], and

that the model actually reflects and systematically addresses the expressed problem situation realistically, at Stage 5. Stages 6 and 7 are included only as parts of the implications to offer of this research, and provides the insights and suggestions for the informants to make further improvement. Based on the concept of sustainability as narrated in the Literature Review section and the interviews, subsequently, the conceptualized model would be based on the Balanced Scorecard (BSC) and strategy mapping structures.

This research exploits SSM approach to guide the case study of a community-based coffee farming business. Coffee production is an important primary economic sector in Chiang Rai, Thailand. As the businesses in Chiang Rai are majority small-scale in nature, understanding how a fund-lacked community member actually performs, wins rewards, obtains certification, and gets brand awareness, is an important piece of knowledge sharing. Specifically, the research objective is:

> The purpose of the research is to develop a theoretical framework, based on BSC and strategy mapping, to narrate and explain how a community member is successful in implementing a sustainability-driven coffee-farming business.

As stated in [7], "each theory is a lens that allows us to interpret a certain form of innovation and knowledge, to identify a particular set of problems, and to seek a variety of solutions to those problems". Nevertheless, this paper is not an exploratory but explanatory assessment of the sustainability-oriented community-based coffee farming business practice, focusing by use of BSC-structured strategy mapping that is assisted by soft systems methodology (SSM).

Literature Review: Traditionally, coffee plants were grown in shade, under the rain forest canopy, which serves as a habitat for migratory birds. Gradually, the coffee plantations moved to full sun farms as there is a need to gear up the production to cope up with the accelerating increase of demand in the markets. Then, having realized the harmful environmental impact of full-sun farming practice, there is a returning trend, particularly advocated by many NGOs such as Rainforest Alliance and Bird Friendly [8], to promote shade-grown certifications.

Specifically, there are two approaches to sustainability-oriented farming, which community-based coffee farming practices can adapt: (1) Sustainability as an approach, and (2) sustainability as a property. [1] recognize that the first approach is more normative in nature, and "is focused more on environmental aspects, proposing the most ecological agricultural processes as more suitable alternatives" (p. 100), and the second approach, as property, is "more positive and descriptive in nature, as well as changeable depending on spatial and time context, making sustainability a result of exchange and interrelationships between economic, social and ecological objectives (p. 100, cf. [9]; [10]). Whichever the approaches, ecosystem is a necessary systems factor. Coupled with the agricultural development, agro-ecosystem is formed, which differs in various vegetation structure, shade tree diversity, and socio-economic characteristics. Based on the data collected in the three neighboring districts of Mt. Elgon, Uganda, [2] discover that shade tree density appeared to be related with smaller plot sizes and lack of access to credit. Furthermore, when farm size exceeds household food needs, mono-crop coffee systems with little to no intercropping of bananas or shade trees seem more possible.

Nevertheless, depending on spatial and socio-cultural differences, things concluded in [2] may not necessarily be applicable to Thailand. Nevertheless, to facilitate ecological sustainability, three important categories of ecosystem service (ES) are suggested, namely ES_{prov}, ES_{reg}, and ES_{cul} [11]: ES_{reg}, refers to "the supply of cultivated terrestrial plants and the contribution to genetic diversity by agro-ecosystems", ES_{reg} regulates to support the quality of ES_{prov}, such as "pollination, biological control, carbon accumulation, soil erosion control, soil formation, nitrogen fixation, and hydrological flow" (p. 4), and ES_{cul}, are strongly related to human values and behavior, and patterns of, for instance, the community-based case organization of its businesses, which can also be adapted to offer community-based tourism (CBT) services [12],[13].

BSC and Strategy Mapping: BSC and strategy mapping are interconnected through a logic that "what gets measured gets managed and accomplished, but strategically, with strategic essence" [12]. On the one hand, organization needs to explicitly clear of its strategy, which describes how a company intends to create value for its shareholders, customers, and citizens [14], and on the other hand, the organization uses BSC as a measurement platform. BSC was once noted as "among the most significant developments in management accounting and thus, deserves intense research attention" [15]. Implementing according to BSC has resulted in significant economic and performance improvements in organizations, particularly when the BSC implementation is determined by a "best fit" between the concept and the current conditions of the organizations, such as its contextual condition [16]. Apart from measurement or monitoring, it is important organization has a clear picture of its logic of competition, and that can be described by strategy map – a causal logic of competitive factors or things emphasized [14]. There are certain logics to follow, as some preliminary theoretical guidelines to acknowledge before entering the case-study field, and the key ones are projected from the four BSC perspectives, summarized as follows:

- To be uniquely different in the farming business, strategy formulation should centralize on a clear set of customer value proposition (CVP). Company uses CVP as focal theme to transform itself [17].
- Long-term basis, i.e. a more holistic, sustainability-based conceptualization, as long-term strategy creates more value than short-term focus [17]. To provide more aligned long-term focus, i.e. sustainability, [18] recommend approaching to design and implement strategies that correspond to certain "drivers" from a combination of "today," "tomorrow," and "internal". Long-term basis like sustainability orientation becomes urgently important with respect to the limitation of resources and the acceleration of consumption level. To be exact, to sustain business holistically, normatively, organizations are recommended to consider TTL (tripled top-lines), which establishes three simultaneous requirements of sustainable business activities – financial benefits for the company, natural world betterment, and social advantages for employees and members of the local community – with each of these three components recognized as equal in status [19].
- To enable value creation, internal business process must be incorporated for the strategic and systematic improvement and innovation [14].
- To accomplish the strategic focus in the BSC and strategy mapping, it is important various strategic themes are used to drive the design and implementation of strategies [14].

Method: The research method employed is singe-case study method, which exploits an in-depth investigation of a community-based case. The case is exemplary and has demonstrated the full commitment, the competencies and systems approach to realize sustainability in specialty coffee farming business. Due to the fact the case fits the prescribed nature and the willingness to show the systems details of how it becomes successful, it is chosen. A single case is descriptively rich, and the ability to share detailed descriptions provide the contents for validity and theoretical generalization. The case selected obtains Thailand's specialty, nature coffee rewards, and certifications to organic, specialty and nature-based coffees lately, making it an exemplar for others to emulate, particularly when the case represents a single man, alone, learns and grows, and commits to do the right things for himself, his family, his community, and shares the values created with anyone who wants to prescribe on a sustainability-oriented coffee farming business. Certification is a base providing credible information to consumers about the attributes of the coffee product and its procedure [20].

To approach in examining the case, interpretative paradigm is borrowed, which underpins on a need to get closer to the informants, and describes things from their own views. To further help push forward with a proven systematic approach, soft systems methodology (SSM) guideline is adapted. According to Jackson (2000), systemic modernism, as its name suggests, is identified with the systems approach as a means of both understanding society and programming it for more effective performance. That is, we attempt to use SSM to not only suggest a model of sustainable coffee farming business, but also to advocate its ability to lead the one who uses it to perform – that is what systems approach is advocating.

To get a rich picture of what is involved with the case issue, the CATMOE-based root definition of the relevant purposeful activity system would first be outlined. The root definition would then guide the construction of the conceptual models of the systems. Once constructed, conceptual models can be checked against with the informants [3], in order to ensure that they are not fundamentally deficient, which yields, from the research viewpoint, the validity, reliability and theoretical generalizability.

In particular, the empirical basis of the case method is drawn from three important informants, namely the owner, a market manager, and customers. The latter is a voice reflected in the social media channel of the case organization.

The Case Organization: Josado Coffee Farm is chosen as the candidate in view of its profile fitness to the research requirement. The farm is located in Ban Mae Chan Tai. The owner resigned his secured job in Bangkok, in year 2014, and started from scratch on a sustainability-targeted coffee-farming business, under the concept of "Think for Sustainability", with four pillars as the cognitive, emotional and behavioral driving forces: 1) Sustainability for environment and nature, 2) Sustainability for coffee farming, 3) Sustainability for farmers, and 4) Sustainability for customers. The interviews and field observations were completed in 2019, which reflected 5-6 years of the case effort working on 100% organic coffee farming, aiming to deliver the quality fruity tastes (i.e. lemon and honey, and Jasmine), healthy coffee to customers and the market. Brand creation has been in the awareness creation stage for about 2 years. The effort resulted in Josado being awarded "Thai Specialty Coffee Award" in March, 2019.

Data Analysis: The model synthesized from the interviews and field observations would be assisted based, fundamentally, on the CATWOE root definition described as follows:

- Customers – The market accepting healthy choice of specialty, nature coffees.
- Actors – Anyone involves in the sustainable farming and business operations.
- Transformation process – a balanced management and measurement approach to the business and farming operations that result in economic success, ecological healthiness of the farming land, and which also benefits the community or other relevant stakeholders.
- Weltanschauung – A belief system, or worldview advocating on "CSV" (Creating Shared Value) and ecological sustainability.
- Owner – The owner can be considered as an agroecological coffee farmer and business entity that relies on principles of ecological sustainability and sharing of value creation with other stakeholders in driving the business.
- Environmental constraint – The community is located in highland, of rich fertile soil that can naturally support the nutrients supplying systems for coffees farming.

The CATWOE root definition thus provides the fundamental cognitive and reflective basis for the interviews, questioning, field observations, document reviews, and theory development.

Themes identified from interviews scripts analysis and field observations are grouped into 1) Drivers, 2) Learning and Growth, 3) Business Processes, 4) Customers, and 5) Sustainability.

Drivers: The important drivers that stimulate and push forward the commitment for sustainability-driven coffee farming business are: hardship, no-electricity, difficulty during raining season, and forest sustainability:

> "We have applied to government for fund on road maintenance and electricity for six years, and could wait for additional five years. Nevertheless, these hardships will not deter me, and motivated me to work harder."

> "From May to November each year, we generally have the raining season, and we have to rely on 4-wheel to move around, such as to the top of the forest mountain where the coffee crops are there. Never an easy life. To get there during the raining period, we have to be

> very familiar with the road pattern and situation, such as turn. This is challenge for visitors as well. We also need to protect our forest so we can get solid soil, not using chemical, and so the nutrients are supported and maintained naturally, based on biodiversity of natural plants and the bees in the forests. Thus, sustainability is a central motivator and mission of us when we started the organic farming practices".
>
> "The forest is maintained by Mae Jan Tai members and not by our government. Thus, we have to pay even more attention to provide a sustainable basis to the forest. The forest is the source and resource for everything possible to us. We know it is not an easy issue, especially we are dealing with a community of large family members – a total of 39 family houses. Thus, Josado decided to be a model of coffee farming that makes use of our natural resources in sustainable way, and not use any chemicals. We can then proudly share our knowledge with our next generation – Organic farming is the way. But we also need to ensure that the organic farming can produce distinctive coffee products known as specialty and natural coffee".

From the above-highlighted drivers, we acknowledge the environmental constraint or nature as the fundamental driver, which motivates a need to provide ecological services that are able to lead to natural specialty coffee farming (ES_{prov}) and are able to regulate the nutrients and quality of the ecological system. This shows that the motivational factors behind the owner are tightly linked to the provisional and regulatory functions of sustainability-enabled ecological services [11]. The drivers provide also the bases for CATWOE root definition.

The Model Outline Synthesized: On the one hand is the farming business needs to consider these drivers, and on the other hand, the mission is set forth as follows:

> "Our mission is to produce organic coffee, advise to community on sustainable coffee-farming practice, to produce best naturally grown specialty coffee, protect upstream forest, focus on brand as one of the choices for coffee lovers, and sustainability stretches from farm to cup, in making 'Creating Shared Value' (CSV) possible.

The mission stated and reiterated many times by the owner and the marketing manager highlights the suitability of the BSC-structured strategy mapping, but with an extended principle- or value-based motivator, as shown in Fig. 2.

Fig. 2: The Four Normal Perspectives of BSC + Principle- and Value-based Motivator as an Extension

Fig. 2 shows the "financial" perspective is replaced by a broader perspective, which is 3P (profit: financial, people: the community, and planet: the forest). The owner stated the core objective as follows:

"Our objective is simple and straightforward – to be sustainable, along the 'Thinking for Sustainability' slogan. This drives our products and our efforts, even in learning. We want to deliver healthy coffees to our customers. Majority of the coffee in the market is either instant and fresh, with minor 10% plus of the market belonging to premium, and specialty coffee remains even smaller portion. To give our customers healthy coffee is the sustainability at the customer side. If you try to fit into the 3P, I would say the people, but the customer aspect. To sustain, we need to also sustain from the market, and healthiness of customers is the best stable basis for sustainability."

The causal map structure of Fig. 2 reflects the MOST (Mission → Objective → Strategy → Tactics) [12] sequence of strategic management, which provides a fundamental basis of theoretical generalizability. In particular, three "strategic themes" are expressed by both the owner and the marketing managers, and also evidenced in the actual farms, practices and the field observations. The strategic themes are shown in Fig. 3: 1) Sustainability basis: farm to cup – which means sustainability stretches the entire value chain, 2) Naturally grown specialty coffee for healthiness – which highlights the organic operations and the alignment with the forest, and 3) creating shared value (for scaling) – which outlines their intention to scale-up the sharing with people, which is a main objective. Promoting CSV also provides a unique way for brand awareness and recognition management.

Fig. 3: The Three Core Strategic Themes

The Themes Identified: The three strategic themes would, according to the concept of BSC and strategy mapping [21], guide the development of the efforts in other perspectives, namely customers, processes, and learning and growth.

"Standardization" is a key theme in the internal business process perspective. Stated the owner:

> "Everything we do – from cupping, to our farming operations, even learning procedures, we focus on standardization. When things are standardized, we can repeat. I have shown you the trial zone, and mass production zone, and all these are possible because of our standardization. The standardization of the ways we do, farming, product delivery steps, even communication and presentation to share with others, is made possible by our commitment and effort in continuous learning. Knowledge leads to standardization. Standardization leads to quality and recognition. Our customers slowly and gradually

> recognize our standardization, our efforts, our persistency, our honesty. Standardization is thus very important."

Another important element in the internal business process is the management of CSV (Creating Shared Value". Josado believes in sharing value with the community, the customers, the certification body, the experts, and other relevant stakeholders. In particular, they believe that through sharing, they can add more knowledge, improve communication skills, get more ideas, have others to help and support, and most importantly, expand the community memberships who share the same spirit and do the right things together. Stated the marketing manager:

> "We share what we have learned with anyone who is interested to learn and apply the similar concept to their farms. We also need to share our value spirit to others so that we can motivate others to help us. CSV is both ways benefiting".

Another very important internal business process element is "Customer and Brand Management". Stated the marketing manager as follows:

> "Brand building is very important if we want to be sustainable. If no one recognizes our products and the unique way of our efforts, then, what we advocate will be meaningless. Thus, we need to build brand recognition. Many things we need to do. First of all, we need to convince to others that our brand stands for specialty and natural coffee. Second, we also need to understand and focus on the lifestyle of people, customers, so that they recognize that our products can match their lifestyle. With that, we can have consistent or continuing purchases." The marketing manager further noted: "This is how we position ourselves – being unique specialty-coffee, natural coffee farmer and value-added producer. Also, we stress on creating shared value – to share what we created and made successful to other members in our community, or other communities, to our customers, and to anyone that can replicate our successes. We had won specialty coffee award, and you see to yourself the sustainable farming practices we have. Time to enlarge our scale and share with others !!!"

Award-winning is certainly a testimonial of their customer and brand management, and farming operations efforts. Other factors and initiatives in brand and customer management include service qualities, packaging design, and dedication to CSR (Corporate Social Responsibility).

Learning and growing is very much the essential driving force for everything that happens, whether on farming process improvement, standardization, brand creation, and award winning. While learning and growing drives everything on the BSC, it is also stimulated by the principle- and value-based motivators shown in Fig. 2. Evidences of learning and growth are numerous: Farms are separated into trial farms (learning purpose) and quality-successful farms, as shown in Fig. 4, and through systematic learning and experimentation, they gradually crystallize their farms with sustainable practices and standardization, leading to sound bio-ecological health. They learn the international principles on coffee tasting and the significance of coffee varieties, such as fruity taste of coffees. Both the owner and the marketing managers stated: "Fruity represents healthiness, and provides the product base for us."

Fig. 4: Trial Farms and Quality- Standardized Farms

In terms of learning and growth of the coffee species and varieties, stated the owner:

> "We now have more than 10 species in our coffee farms. This is important as we can control and customize the tastes that are unique to the markets. We also learn to blend different varieties, and study how to process them, in order to create different types of tastes. We study defect of coffee beans, and roasting operations. We bought a small roaster from Taiwan, and experimented for two years on roasting, and makes us able to better deliver good quality coffees to our customers. When we learn, we really grow, and in many aspects, such as in farm operations, and the processes from farms to cupping."

They continue to grow many unique species of coffee, such as "Getcha", which is very valuable and expensive coffee in the world. To do so, they make use of their experimentation and testing farms, and install systematic monitoring, and learn to grow "Getcha". Clearly, through continuous learning, they grow by gaining a wide spectrum of knowledge spanning from farms to cupping. Any stages of the production chain are important if real value is to be created. Only knowledge truly gained from learning and growing experiences, can they truly share the values to others. On the one hand, they intend to share the good practices, and on the other hand, they also have to preserve unique know-how for differentiation and value-capturing.

Conclusion: Looking into the ecological nature of the community-based farming practice, it can be said that the vegetation structure is of one of multi-layered, diversified shade [22], which has only less than a quarter of coffee plantations worldwide [23]. The farming-sustainability topic has become increasingly important in research, especially in view of the climate variability that has shown tremendous negative impact on agricultural livelihoods [24]. This study shows how a community member is able to implement a sustainability-oriented specialty coffee-farming business starting from scratch. The case captures the five-year efforts and structures the holistic and systems approach based on BSC-structured strategy mapping, which, due to its causal relationship, can easily be adapted by other farmers and business owners.

Supported with the CATWOE root definition of the soft systems methodology (SSM), and in view of the important ecological sustainability principles and knowledge found in the literature i.e. about ecological services [11] and sustainability as an approach or/and property [1], this research concludes findings that can be structurally captured and explained based upon the BSC (Balanced Scorecard) and its structured strategy mapping concepts. While the details have already been narrated and interview scripts demonstrated, Fig. 5 of this section presents an aspect of the strategy map derived based on concepts of BSC and strategy map. Specifically, the CSV principle and value provides an aspect of aspiration and

motivation, which can be grouped into three domains, namely 1) Reconceiving products and markets – to provide the markets with naturally grown, organic and specialty coffees, filled with healthy, natural fruity tastes, 2) Redefining productivity in the value-chain – through making use of natural fertility, and bio-diversity, the ecological service is of quality to support the productive growth of specialty coffees, and third, 3) enabling local cluster development – by the support of the community, and cross-pollination of ideas and exchanges of knowledge, including a collective commitment for a common movement towards sustainability-oriented specialty-coffee farming businesses. Through a systematic value-based motivation, it not only provides a focus for internal business process standardization, i.e. in farming to cupping, but also an identity uniquely associated with the sustainability and CSV driven business practices, to build brand, associated with unique product propositions, leading to award winning. In a way, the strategy map also reflects and extends the marketing mix into 10Ps: namely:

> *Principle (i.e. CSV, sustainability oriented) and Person (i.e. leader of the business, the community, the relevant stakeholders such as the subject experts) → Process (i.e. learning and growth, internal process, including customer and brand management, farming operations, continuing adaptation of farming to cupping) → 4P (Product, Price, Place, and Promotion) → Sustainability 3P: Profit, People, and Planet.*

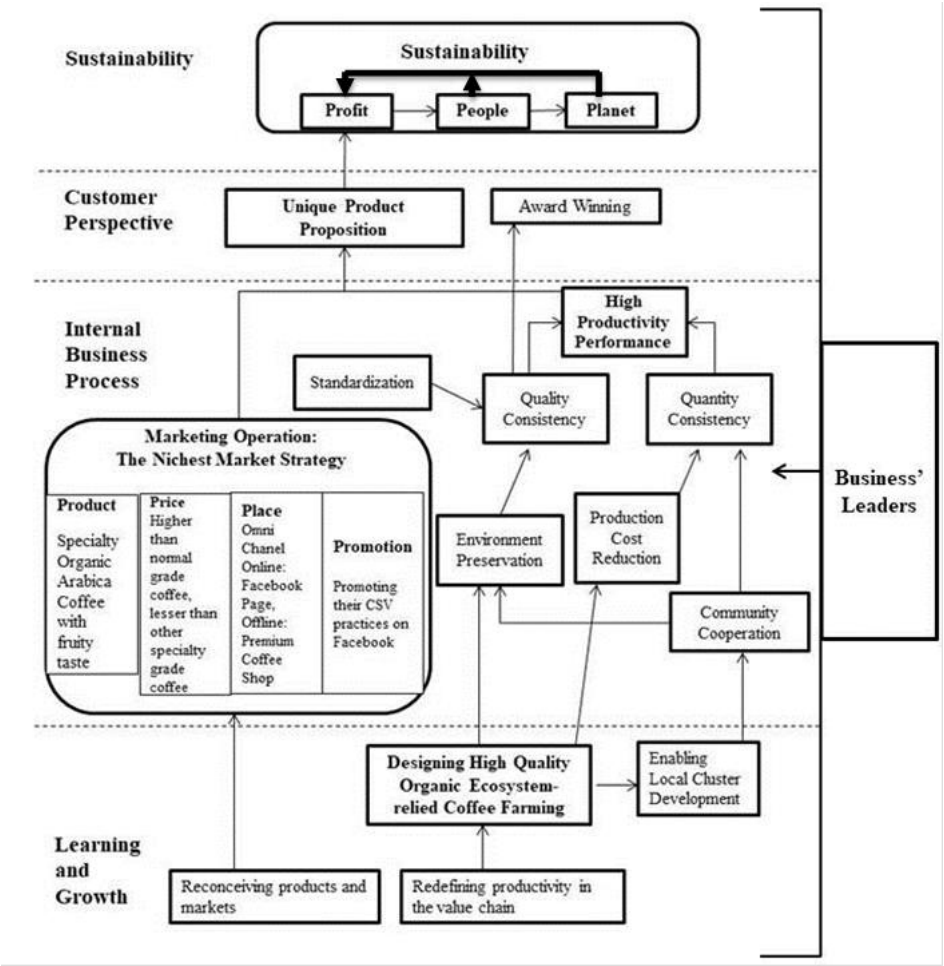

Fig. 5: The Detailed Strategy Map Derived from the Case-Study

The *areas of contributions* are highlighted in this research at theoretical, methodological and practical domains.

Methodologically, this research skillfully exploits the systematic approach of soft systems methodology (SSM), owed originally to [4],[25],and [3] to apply to case method, particularly through clear root definition designated by CATWOE, which provides a holistic framework to guide data analysis, conceptualization and inclusions of appropriate informants for triangulation and validity purposes.

Practically, this research articulates a theoretically rich strategy map describing how a fund-lacked community member has systematically conceptualized a system of activities and efforts to create something of large-scale values to the societies. The values created are sustainability oriented, made possible and multiplied by efforts to create shared values with the customers, the communities and other relevant stakeholders.

Theoretically, this paper extends the BSC (Balanced Scorecard) and its structured strategy map [26] to include principle- and value-based motivator, with the efforts made towards realizing the mission of the community-based case entity (cf. [12], referring to the MOST framework of strategic management). Another obvious theoretical and practical contribution is the 10P marketing mix initiatives, namely Principle (i.e. CSV, sustainability oriented) and Person (i.e. leader of the business, the community, the relevant stakeholders such as the subject experts) → Process (i.e. learning and growth, internal process, including customer and brand management, farming operations, continuing adaptation of farming to cupping) → 4P (Product, Price, Place, and Promotion) → Sustainability 3P: Profit, People, and Planet.

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FACTORS INFLUENCING STUDENT SATISFACTION OF THE COMMUNITY-BASED PRIVATE SCHOOLS IN MYITKYINA, KACHIN STATE, MYANMAR

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Abstract: Assessing satisfaction of the students can give vital information that shows the successfulness of the community-based higher-education institutions in delivering appropriate educational products or services to the market. Studies examining student satisfaction have primarily emphasized on service quality traits as the sources of enablers, and this research extended it by exploiting social responsibility engagement as another stimulating factor, and introduces school image and perceived values, as mediators, to cause further increase of student satisfaction and subsequently loyalty. Loyalty covers both attitudinal and behavioral domains in the sense of forming positive attitude of the school and enables the students to show willingness to say positive things of the institution, including coming back to perform individual social responsibility services. A valid 181 responses were subjected to SPSS-based statistical analysis, and is further supported by structural equation model (SEM) fit-tested by AMOS. The SEM tests show perfect incremental and absolute fits, which supports the proposed framework. Practical implications such as the significant differences between male and female students should be the points acknowledging the differences of gender to recommend for the appropriate program design to fit them differently.

Keywords: School image, service quality, social responsibility and engagement, student loyalty, student satisfaction.

Introduction: In Myanmar, education is rapidly growing as a service sector, involving not only the primary and secondary levels but also higher educational institutions, including private diaspora community-based schools. Many of the diaspora community-based higher education offers certifications and schooling system but they are still lacking of Government standardized regulation. The Myanmar education system is shown in Fig.1.

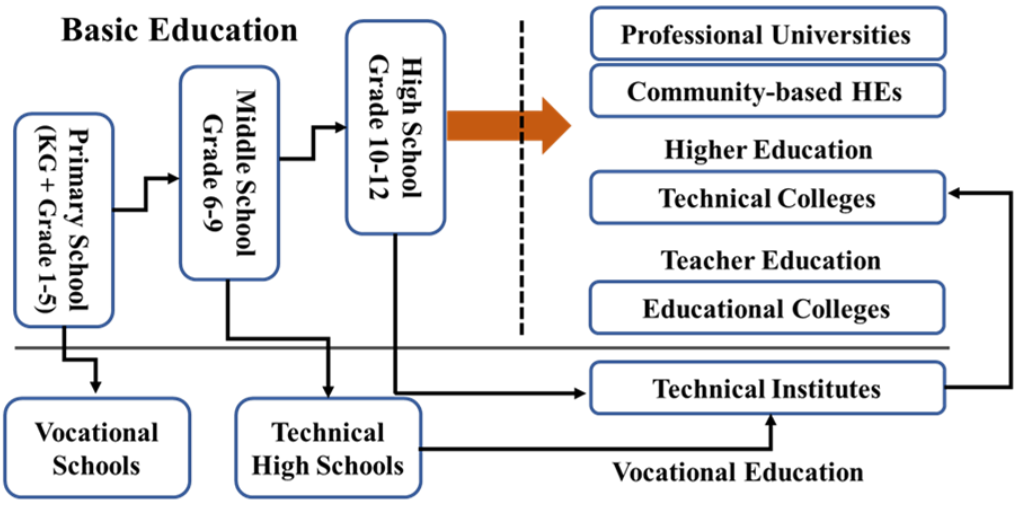

Fig. 1: The Educational System in Myanmar

Education is a process, which supports students to change in positive ways, and introduces them to new things and experiences [1]. Moreover, Education is essential for individual knowledge acquisition, career accomplishment, and further, increases the status of organization and community [2]. Besides, not only does educating students empowers the students but it also generates revenues, which is the objective of school investments. Education is essential for the development of any country. Communities and society will gain benefits if education improves in a country. Education is a main pillar for national

competitiveness, which can enhance worker efficiency and, workers having better education are also more able to contribute to design and operate advanced production [3].

Myanmar, formerly known as Burma, is the Northwestern-most country in mainland Southeast Asia. It has many diverse ethnic groups and it shares borders with Bangladesh, China, India, Laos and Thailand. There are many higher educational centers or institutions that support students who are difficult to access higher education in Myanmar. More and more education centers have opened every year in Myanmar. Community-based higher education has become one of the most crucial service sectors in Myitkyina, Kachin State, Myanmar. Besides, due to the quick development of the community-based higher education, it has triggered high level of competition for grabbing market share among community-based higher education institutions or schools in Kachin State, Myanmar, so that people have more opportunities to choose the school that is most aligned with their interest. There are many different kinds of higher education institutions competing with each other for enrollments and funds [4]. Hence, higher education organizations should begin finding better ways that are more effective and creative by which they can persuade and preserve solid relationships with the students [5]. Higher educational institutions (community-based private schools, universities and etc.), as service institutions, should provide high quality services that can fulfill students' needs. The students who are satisfied, as a result of high-quality services, can help the educational institutions to improve their educational quality, and involves more actively.

However, the quality of education provided in Myanmar has much room to be improved, not only to enhance the knowledge and skill of the students, but also to persuade the students to increase enrollment whereby higher education institutions can gain revenue by providing high quality of services. There is a need to systematically upgrade and strengthen the higher education system in Myanmar – that is, to equip the students with the ability to think critically, and innovatively, which needs to invest in infrastructure – teaching, libraries, Internet and laboratory facilities- by which the students can polish their skills in order to meet the demand of economic development of today and in the future market economy [6]. Hence, there are several questions that we must ask, such as what is the quality of services that schools should provide? These are immediate, and urgent question to answer in Myanmar context. This research captures only the current-state of reality of the services. Having aware of a lack of research and information, the researchers decide to conduct research on this topic, targeting on the community-based private schools in Kachin State, Myanmar. This study presents a comprehensive examination of multiple factors that influence student satisfaction and student loyalty of community-based private schools in Kachin State, Myanmar. Specifically, a two-fold research objective is established;

RO1. To examine factors that influence student satisfaction in community-based private schools in Myitkyina, Kachin State, Myanmar.

RO2. To propose a conceptual model which is applicable for the development of the community-based private schools in Myitkyina, Kachin State, Myanmar.

In order to address these research objectives, the research focuses on two main research questions (RQ1 and RQ2) as follows:

RQ1. What kind of factors that are most relevant in influencing student satisfaction, and which of them are significantly important?

RQ2. Do any demographic variables play significant important role in the student perceptions relating to the theoretical conceptual framework?

Literature Review:

Service Quality and Social Responsibility Engagement: An escalation of brands on the market, by which the decisions of consumers on buying largely rely on, is a cornerstone of the advancement of 21st century [7]. Higher institution sector is no exception, and many researchers have traced school branding and loyalty of students to the institutions (such as in the sense of forming positive attitude, to proactively recommend the institution to other potential students) to how the stakeholders form perceptions of services and therein images [8], [9]. In higher education literatures, there are many factors that are shown to be able to enhance school image. Educational institutions can differentiate in their positioning

in the existing and potential markets if they can enhance their corporate image and reputation. Reference [10] presents many cases including higher education institutions, highlighting that higher education should deliver a corporate social engagement-spirited services as it signifies the empathic caring of the school towards the students and the society at large, which can establish a strong basis for favorable brand image formation. Toward this end, we assume **H1**:
H1. There is a positive interrelationship between service quality and corporate social engagement.

Reference [11] states that the corporate image of institutions is comprised of two principle components; first, university corporate image which has tangible features easily measurable and evaluative judgement formed. Second, university emotional corporate image, which consists of feelings, attitudes and the beliefs one has about an institution. As images are driven by service encounters, both the tangible and intangible components of image can infer that service quality (SQ) is of two types, namely tangible SQ and intangible SQ [10]. While services are offered to a target customer that exchange the values delivered by means of earning, a spirituality-spirited service has an additional source, such as corporate social engagement activities offered by the schools [10]. Thus, customers' judgment of the capability and social responsibility are incorporated in this research. According to the above explanations, and the results of the previous studies, partly illustrated above, we propose the following hypothesis:
H2: Service quality (Intangible SQ, Tangible SQ) and social responsibility and engagement have a positive effect on school image.

Student Perceived Value: Reference [12] defines customer perceived value as "consumer's overall assessment of the utility of a product based on the perceptions of what is received and what is given". In higher education, the overall assessment that is inclusive of the usefulness of the service based on the perception of what is received will drive the value formation [13], [14]. In other words, customer value is evaluated based on the customers perceptions of their service experiences. Student perceived value also contributes to school image. Reference [15] reported if customers believe that they get a high value in the purchase, the image of the said company or brand will be strong. Deductively inferred, higher educational institutions would need to focus on the factors that can impact customer perceived value, such as by reinforcing service quality [16], [17],[18].

By treating social responsibility engagement (SRE) of the organization as a spirit-oriented form of services [10], SRE can also contribute to similar perceived value, such as social value manifested in the strengthening of the relationships with the society [19], [20], [21]. Institutions participating in engagement activities are frequently praised for their socially responsible behavior [22]. As such, two additional hypotheses are raised:
H3: Service quality (Intangible SQ, Tangible SQ) and social responsibility and engagement have a positive impact on student perceived value.
H4: Student perceived value has a positive impact on school image.

Student Satisfaction and Loyalty: In the higher education sector, student satisfaction has become a main factor that drives the achievement reflected with competitive advantage. Students satisfaction is a form of "the perception of enjoyment and accomplishment in the higher education learning environment" [23]. Reference [24] describes that assessing satisfaction of the students can give vital information that shows the successfulness of institutions in delivering products and services to the market.

Studies examining student satisfaction have primarily emphasized on service quality traits as the sources of enablers [25], [26]. The notion of experience of student is connected "not only to interactions with faculty, courses, and overall learning experiences, but also to other aspects that fall within the domain of student life such as administrative service, staff, physical characteristics of academic facilities, social environment, and advising support" [27]. Therefore, it is important to access service quality of each of the above stated domains.

Besides, even though service quality is strongly associated with student satisfaction, it is not the only variable that can impact on satisfaction. For example, some variables also impact satisfaction such as when a customer is satisfied with the said service, the image of the company also directly influences the level of satisfaction. In addition, student perceived value also impacts upon student satisfaction. Perceived value is a significant driving force of consumer satisfaction [28], [29]. Many researchers have shown that there is a direct relationship between value and satisfaction. Moreover, most researchers have preferred perceived value as antecedent to customer satisfaction though it is likely that satisfaction can influence the outcome of perceived value [16]. Last but not least, when stakeholders like students felt that they are a part of the social responsibility engagements of the school, they will form positive image, and demonstrate higher level of satisfaction [30]. In sum, the following hypothesis is assumed:
H5: Service quality (Intangible SQ, Tangible SQ), social responsibility and engagement, school image and students' perceived value have a positive impact on student satisfaction.

Due to the increased competition among educational institutions, many researchers have emphasized on the study of student loyalty [31], [32]. Student loyalty has become a vital concern for higher education institutions since it is a practical implication for their operational success as a service provider [33]. If an education institution increases student loyalty, it is likely to enhance its reputation and education loyalty, student retention, and financial support from alumni [34]. Therefore, student loyalty is important for the higher education institutions in order to preserve and increase revenue.

Besides, there are also other antecedents of student loyalty which have been identified in the previous studies. In higher educational institutions, student loyalty and student satisfaction are always positively correlated. Satisfaction is the focus area of studying customer loyalty in any business institution [35], [36]. A general assumption of satisfaction is that satisfaction might increase the loyalty predictor of students' loyalty [37], [38]. Besides, there is a general assumption in this study that, school image also impacts upon student loyalty. If students have potential career prospects after they are graduated, and they are respected by others, they will be proud of the high reputation of the school that they are studying at, by which they will achieve satisfaction which will later drive the students to spread positive information of the school to their friends or relatives. Previous studies also have shown that customer perceived value also influences loyalty. Customers that receive superior value from a given product or service will often prefer that company and will suggest it to others as well [39]. To this end, the final hypothesis of this study is stated:
H6: School image, students' perceived value and student satisfaction have a positive impact on student loyalty.

To conclude, based on the information organized above, the following conceptual framework is derived, as shown in Fig. 2.

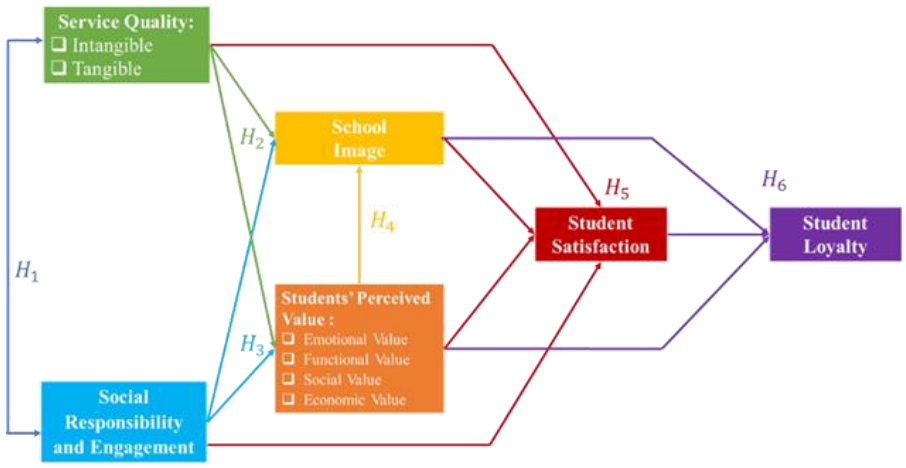

Fig. 2. The Conceptual Framework

Method:

Sample design and data collection: This study is conducted to examine the factors – service quality, school image, social responsibility and engagement, and student perceived value - that influence student satisfaction and loyalty of community-based private schools in Myitkyina, Kachin State, Myanmar. To achieve this objective, we identified students from the community-based private schools as our target population for this study. Students are chosen since they are considered as direct customers of the schools that are qualified to give accurate information. Whereas 550 questionnaires sets were distributed to the community-based schools - Naushawng Community School, Pinnya Tagar Academy and Kachinland School of Arts & Sciences, 181 returned, which has 33 % response rate, which is acceptable when surveys are not self-administered.

Fig. 3: (Naushawng Community School)(Kachinland School of Arts and Sciences)(Pinnya Tagar Academy)

Research instrument: The assessment of the reliability and validity instruments in any research is essential. Researchers have the responsibility to assure research reliability and validity [40]. This study adapts SERVQUAL instrument because SERVQUAL instrument is widely recognized as a common tool for measuring the service quality, and has demonstrated strong reliability and validity bases, with many research capabilities and applications [41]. The questionnaires designed were also subjected to rigorous pilot tests, involving subject experts in research methodology, the topics relevancy, and tested on 31 students. The questionnaire instrument is detailed in the "Result and Discussion" section along with the factor loading, mean, and standard deviation of each item, and the reliability index (Cronbach's alpha) of each construct.

Data analysis method: Data was analyzed by using IBM SPSS Statistics version 25.0, involving statistical tools Independent Sample T-test and ANOVA tests, exploratory factor analysis, correlations and multiple regression analysis. Moreover, we also conducted the Structural Equation Model (SEM) fit tests, which provide also the supports for the six stated hypotheses, following two-step approach: namely, measurement verification, and model fitness assessment [42].

Result and Discussion:

Descriptive Profile and Cross-Comparative Analysis: There are 181 participated in the survey, and most of them are from Naushawng Community School (40%), Kachinland School of Arts and Sciences (36%), and Pinnya Tagar Academy (24%). Among them, 41 % are male and 59 % female. The majority are between 16 to 20 years old, and the age between 21 to 25 are the second largest portion of participants. The age between 26 to 30 years old and above 31 years old is a smaller participation percentage for this study. The respondents that completed the questionnaire for this study indicate that 98% were single and a total of 2 % were married. Regarding to the latest educational achievement, 19 % of the respondents are pursuing a Bachelor degree, 1 % of respondents are pursuing a Master degree, 17 % of the respondents hold a Bachelor degree, and 62 % of the respondents passed Grade (XI). **Table I** bellow shows not only the demographic profiles, but is indicate of the significant differences between the male and the female students – the female students perceive higher level in all the constructs studied, and particularly significantly on student satisfaction and student loyalty.

Table I: Descriptive profiles, ANOVA and t-test results

Description		Frequency	%	The constructs						
				TAN	SI	SRE	SS	SL	SPV	Intangible SQ
School	NCS	72	40	3.28	4.12	3.88	3.95	4.38	4.21	3.53
	Pinnya Tagar	43	24	3.93	4.52	4.59	4.19	4.42	4.39	4.07
	KSAS	66	36	3.16	3.84	3.51	3.69	3.97	3.92	3.57
	(F, df1, df2)			(20.82,2,178)	(14.33,2,178)	(26.08,2,178)	(7.74, 2,178)	(10.11,2,178)	(10.07,2, 178)	(16.82, 2,178)
	Sig. (2-tailed)			0.00	0.00	0.00	0.01	0.00	0.00	0.00
Gender	Male	75	41	3.30	4.12	3.81	3.78	4.12	4.07	3.55
	Female	106	59	3.46	4.11	3.99	4.00	4.32	4.20	3.76
	(t,df)						(-2.221, 179)	(-2.067, 179)		(-2.603, 179)
	Sig. (2-tailed)						0.03	0.04		0.01
Age	16-20	125	69	3.43	4.09	3.89	3.87	4.17	4.10	3.67
	21-25	44	24	3.31	4.20	3.99	4.00	4.44	4.28	3.65
	26-30	11	6	3.36	4.06	3.95	4.03	4.30	4.16	3.81
	31 above	1	1	2.67	3.33	3.50	3.00	3.50	3.56	3.29
Marital status	Single	177	98	3.40	4.11	3.91	3.93	4.26	4.15	3.69
	Married	2	1	2.50	3.33	3.75	3.00	3.25	3.26	3.28
	Other	2	1	3.42	5.00	4.25	2.67	3.88	4.46	2.86
Education Achievement	Pursuing Bachelor Degree	35	19	3.23	4.06	4.00	3.85	4.32	4.20	3.49
	Pursuing Master Degree	2	1	2.34	3.33	3.50	3.50	3.75	3.79	3.41
	Finished Bachelor Degree	31	17	3.40	4.14	3.95	3.89	4.36	4.21	3.59
	Finished Master Degree	0	0	0	0	0	0	0	0	0
	Passed Grade (XI)	112	62	3.47	4.14	3.88	3.94	4.19	4.11	3.75
	Other	1	1	1.83	3.67	4.50	4.00	4.50	4.71	3.86
	Significantly Difference									

Notes for Table I: NCS Naushawng Community School, Pinnya Tagar Academy, KSAS Kachin Land School of Arts and Sciences

Kachinland School of Arts and Sciences (KSAS) has significantly lower perceptual level on all the constructs studied when compared to Pinnya Tagar Academy in particular. Fig. 4 illustrates some of the school activities at Pinnya Tagar Acaemy community school.

Fig.4. Participating in the Social Activities (Students from Pinnya Tagar Academy)

Results of Validity and Reliability Assessment: The reliability and validity of the measurement instrument (referring to Table 2) were verified, which reasonably conform to the threshold requirement for reliability (Cronbach's Alpha ≥ 0.7), and factor loading > 0.6 for each questionnaire item of the construct. Cronbach's Alpha indicates the internal constancy of the questionnaire items of the construct, which makes the questionnaire reliability to be qualified [43].

Table II: Measurement Instrument

Constructs	**Items**	**Cronbach's Alpha**	**Factor Loading**	**Mean**	**Std. Deviation**
Service Quality (SQ)					
SQ (Assurance)	ASS1: Lecturers have good knowledge and experience about their teaching subjects.	0.7	.783	3.97	0.68
	ASS2: Lecturers know their teaching materials well to suit the students.		.742	3.60	0.79
	ASS3: Lecturers have the knowledge to answer student questions.		.675	4.13	0.70
	ASS4: Lecturers are able to provide real world experiences in their lectures.		.721	4.03	0.86
SQ (Empathy)	EMP1: Lecturers treat students with respect.	0.69	.673	3.87	0.83
	EMP2: Head of the program has willingness to receive complaints and suggestion from students.		.749	3.69	0.97
	EMP3: Dean can be met and contacted by students to understand and share their feelings.		.711	3.45	1.06
	EMP4: School's student consultation service provides solutions and benefit to students.		.746	3.52	0.85
SQ(Reliability)	REI1: Lecturers conduct themselves professionally.	0.68	.695	4.14	0.78
	REI2: Lecturers always come to class on time.		.828	3.78	0.92
	REI3: When my lecturers promise to do something by a certain time, they do so.		.808	3.40	0.94
SQ (Responsiveness)	RES1: The administrative staff always provide prompt response to students' request.	0.73	.843	3.24	0.90
	RES2: The administrative staff are always willing to handle the urgent request from students.		.838	3.43	0.94
	RES3: Lecturers are always willing to help the students without delay		.737	3.68	0.91
Tangibles	TANG1: Computer facilities are provided in library.	0.68	.530	3.85	1.20
	TANG2: Easy access to shelves in library.		.767	3.98	1.02
	TANG3: Having variety of books in library.		.826	3.48	1.08
	TANG4: Books and teaching materials related to		.750	3.45	0.94

	the syllabus are available.				
School image	SI1: People from outside think that this school has good reputation regarding to their alumni	0.80	.814	4.06	0.82
	SI2: People from outside think that this school polishes skills of youth from the community		.865	4.19	0.78
	SI3: Parents from the community think that this school can improve their children lives.		.862	4.08	0.85
Social responsibility	SRE1: In our school, we frequently involve in social responsibility projects.	0.75	.897	3.76	1.05
and engagement	SRE2: In our school, we are trained to appreciate social responsibility issues.		.897	4.07	0.89
Student perceived value					
Emotional value	EV1: I feel that studying at this school is very exciting.	0.73	.719	3.88	0.91
	EV2: When studying at this school, I feel that it is the best place where I can improve my life.		.793	4.04	0.79
	EV3: I feel happy studying at this school because I can freely express my thoughts in classroom.		.789	4.17	0.82
	EV4: When studying at this school, I feel that everyone in the school treats each other as a family.		.678	3.99	0.97
Functional value	FV1: The systems of the school make students to be an independent person.	0.84	.854	4.31	0.81
	FV2: The experience that I got in the school enhance my self-confidence.		.827	4.23	0.79
	FV3: The knowledge that I got from the school is very useful for my real life.		.815	4.26	0.79
	FV4: The school guides me a lot how to work as a team.		.784	4.23	0.86
Economic value	ECO1: I believe that the prices that I pay for the services of this school is worthwhile.	0.844	.930	4.10	0.93
	ECO2: The service that the school provides is more valuable than the money that I spend for the service.		.930	4.13	0.93
Social value	SV1: We value diversity in this school.	0.66	.783	4.24	0.85
	SV2: We don't support discrimination among each other in this school.		.739	4.43	0.80
	SV3: In this school, everyone treats each other with respect and love.		.790	3.88	0.90
Student Satisfaction	SS1: I receive the service from the school as I expected.	0.75	.836	3.67	0.87
	SS2: School provides the service as they promise to the students.		.835	3.87	0.85
	SS3: I would say that my overall experience at this school is excellent.		.773	4.19	0.77
Student Loyalty	SL1: I am willing to recommend to my friends to join the school.	0.78	.826	4.22	0.84
	SL2: I am proud of being a student or an alumnus of this school.		.808	4.31	0.75
	SL3: I will always keep in touch with the school after I am finished the school.		.753	4.07	0.97
	SL4: I am willing to help the school if the school asks some helps to me in the future.		.704	4.36	0.78

Combining Table II and Table III, we confirm both convergent validity (i.e. reflected by KMO > 0.6, TVE more than 0.50, factor loading of each unitary construct ≥ 0.6, Cronbach's Alpha ≥ 0.7), and divergent validity supported by square root of TVE more than the cross-correlations coefficients in Table III.

Table III: Correlation Matrices and Divergent Validity

						The Constructs						
	Mean	Std. Dev	α	KMO	TVE	**TAN**	**SI**	**SRE**	**SS**	**SL**	**SPV**	**Intangible SQ**
TAN	3.45	0.74	0.67	0.74	0.61	**0.78**						
SI	4.11	0.69	0.80	0.70	0.72	0.57	**0.85**					
SRE	3.91	0.87	0.75	0.50	0.81	0.57	0.61	**0.90**				
SS	3.91	0.68	0.75	0.68	0.66	0.51	0.51	0.46	**0.82**			
SL	4.24	0.65	0.77	0.70	0.60	0.51	0.52	0.45	0.65	**0.77**		
SPV	4.15	0.57	0.89	0.89	0.57	0.51	0.59	0.59	0.71	0.63	**0.75**	
Intangible SQ	3.67	0.56	0.86	0.89	0.54	0.60	0.57	0.61	0.63	0.51	0.62	**0.73**
			Factors loadings: All factors loadings > 0.70									
			Correlations Coefficients are significant at the 0.01 level (2-tailed) **									
			The diagnoal = square root of TVE									
			Criterion for divergent: The diagnoal must be higher than the cross-correlations coefficients.									

Notes for Table III: SL student loyalty, SS student satisfaction, SI school image, SPV student perceived value, SQ service quality, SRE social responsibility and engagement.

Hypotheses testing: The six hypotheses were supported and summary is given in Table IV, significant to p ≤ 0.05 (0.05 level), based on the SEM path structural analysis. Multi-collinearity does not exist, shown by VIF < 5 [47]. Significant ability to explain each relevant dependent variable is shown by R^2 ranging from 0.47 to 0.57. The path structure of the SEM is shown in Fig. 5, indicating the path coefficient in the arrow and R^2 at the right-hand-corner.

Table IV: Results of Hypothesis Test

Dependent Variable	**Independent variable**	**Beta**	**t**	**Sig.**	**Collinearity Statistic**		**Hypotheses**	**Result**	R^2
					Tol	**VIF**			
SL	SS	0.37	4.87	0.00	0.486	2.06	H6	Supported	0.49
	SPV	0.26	3.10	0.009	0.424	2.356			
	SI	0.18	2.62	0.02	0.635	1.574			
SS	Intangible SQ	0.28	3.89	0.00	0.463	2.16	H5	Supported	0.57
	Tangible SQ	0.12	1.84	0.68	0.541	1.848			
	SRE	-0.11	-1.57	0.117	0.478	2.09			
	SI	0.04	0.53	0.599	0.495	2.02			
	SPV	0.52	7.41	0.00	0.502	1.99			
SI	SPV	0.24	9.807	0.00	1.00	1.00	H4	Supported	0.50
SPV	Intangible SQ	0.36	4.802	0.00	0.532	1.880	H3	Supported	0.47
	Tangible SQ	0.12	1.707	0.09	0.582	1.719			
	SRE	0.30	4.127	0.00	0.561	1.782			
SI	Intangible SQ	0.13	2.903	0.04	0.532	1.88	H2	Supported	0.50
	Tangible SQ	0.22	3.550	0.00	0.582	1.72			
	SRE	0.26	4.594	0.00	0.561	1.78			

Notes for Table IV: SL student loyalty, SS student satisfaction, SI school image, SPV student perceived value, SQ service quality, SRE social responsibility and engagement.

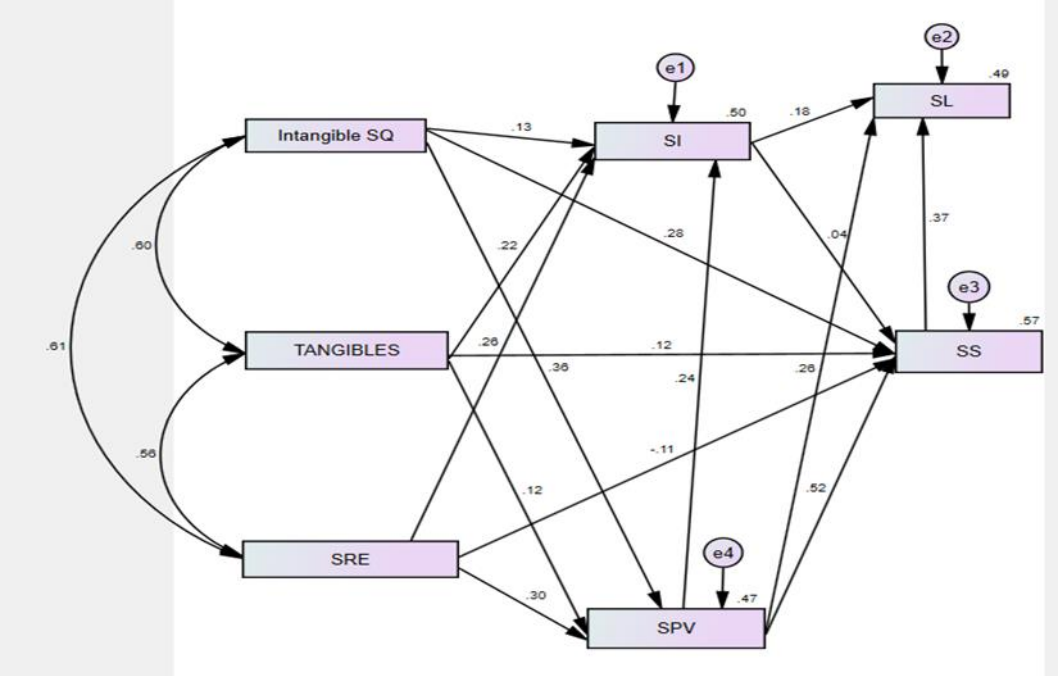

Fig. 5. The Validated Structural Equation Model

The SEM model fit statistics are given in **Table V**: a x^2 (chi-square) of 4.711, degree of freedom = 3 and p value = 0.194 (perfect absolute fit, by Livelihood Maximization). Incremental fits are supported: NFI = 0.993, TLI = 0.982, CFI = 0.997 and RMSEA = 0.056.

Table V: Model Fit Statistics

CMIN					
Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	32	4.711	3	.194	1.570
Saturated model	35	.000	0		
Independence model	14	702.417	21	.000	33.448
Baseline Comparisons					
Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default Model	.993	.953	.998	.982	.997
Saturated Model	1.000		1.000		1.000
Independence Model	.000	.000	.000	.000	.000
RMSEA					
Model	RMSEA	LO 90	HI 90	PCLOSE	
Default Model	.056	.000	.148	.362	
Independence Model	.425	.398	.452	.000	

Conclusion: This study provides a rich empirical understanding and evidence for the community-based higher educational institutions, illuminating how they can make use of the validated structural equation model to achieve student satisfaction and loyalty. The model empirically shows the significant importance of providing high quality service (intangible, tangible) to students in the community-based higher education sector and the participating social activities are seen as important factors that are

positively interrelated each other, and induce student satisfaction. School image and student perceived value are two important mediators. The community-based schools should be brought to aware of the critical interrelationship between service quality (intangible, tangible) and social responsibility and engagement, and make use of these factors to satisfactory services of favorable positive school images and values, sharing the outcomes reported also as in [10] for the Thai higher education institutions.

Since the perceptual level of Kachinland School of Arts and Sciences on tangible service quality plus other attributes are low, they should realize a need for continuous improvements, otherwise it will negatively impact on achieving student satisfaction and loyalty. The community schools should also realize the significant differences in the perceptions of the all the constructs studied in between male and female students, which should be critically assessed and programs improved to cater their needs.

To conclude, this study proposes a validated structural equation model which is applicable for the community-based schools to achieve student satisfaction and loyalty.

Further research: This study has shown valuable information which is applicable for the community-based schools. The author suggests that further research to be conducted should focus on interviewing about gender to see what other differences may exist, and should extend to other community-based schools in other regions in Myanmar.

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SCIENCES

EXTRACTION OF CELLULOSE NANO-WHISKERS (CNWS) USING IONIC LIQUID (ILS) ASSISTED ULTRA-SONICATION

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Abstract: This study focuses on the extraction of cellulose nano whiskers (CNWs) from the leaves of *Adansonia kilima* (AK), usually known as African Baobab, using a combination of a microwave-assisted alkali (KOH) pre-treatment with subsequent bleaching process prior to ultra-sonication. Ultra-sonication was carried out using ionic liquid (ILs) of 1-butyl-3-methylimidazolium hydrogen sulfate (Bmim-HSO_4). Process parameters for ultra-sonication were optimized using 2-Level Factorial Box Behnken Design (BBD). Process variables such as ultra-sonication power (x_1), hydrolysing time (x_2) and temperature (x_3) were varied. Responses selected were percentage crystallinity index, CrI % (y_1) and yield % (y_1) for the finally procured CNWs sample. Regression analysis was carried out to develop quadratic model to analyse the effect of process variables on ILs assisted ultra-sonication process. Analysis of Variance (ANOVA) showed that ultra-sonication power was the most influential aspect for hydrolysing the amorphous segments of crude cellulose extracted from baobab leaves. A relative study of the physio-chemical properties of the starting lignocellulosic substrate (AK), KOH pre-treated, bleached and ILs assisted ultra-sonicated CNWs was conducted. The synthesized samples were characterize using Fourier transform infrared spectroscopy, Scanning electron microscopy, Atomic force microscopy, High resolution transmission electron microscopy, X-ray diffraction and Thermo-gravimetric and Zeta Potential analysis. Under optimum condition, the extracted CNWs showed an average width of 15–20 nm; with high crystallinity index of 86.46 %. This research provides an insight about the delignification of *Adansonia kilima* (AK) leaves and its' effective conversion to CNWs having high crystallinity.

Keywords: Ionic Liquid (ILs); Crystallinity Index; CrI %; Cellulose Nano whiskers (CNWs); Analysis of Variance (ANOVA), Box Behnken Design (BBD)

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IMPROVING CYBER-SECURITY SYSTEMS USING MACHINE LEARNING TECHNIQUES

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Abstract: Cyber-security also called as information technology security or e-information security is the act of protecting electronic devices, networks and data from malicious digital attackers. Cyber-security counters various threats such as cyber-attack. An intentional attempt by a person or an organisation to break other's information system to get some kind of benefit from the network of the victim is referred as cyber-attack. Cyber-security threats have been on the rise with the advancement of technology in recent years. The cyber-security threats affect almost every industry or organisation irrespective of its scale. This is applicable to a wide range of contexts including business and mobile communication systems. Hence research and investigation is required to improve the cyber-security systems to make it highly robust and secure.

Machine Learning (ML) has appeared as one of the most popular areas of research by the academics and industry in recent times due to its applicability in wide range of interdisciplinary research domain. The ability of the computers to learn without being explicitly programmed and to make the best use of a performance criterion based on example data or past experience is referred as Machine Learning (ML). In ML, inference is made from a sample based on evidence and reasoning. ML techniques can build models of system behaviours and make future predictions using those models based on new input data. ML can respond to cyber-security attacks in real time by analysing the threat in a better way and will be able to prevent threats and active attacks. It can make cyber-security systems simpler, less expensive, more proactive and more effective in preventing similar attacks as well as responding to change of behaviour.

In this keynote/plenary talk, fundamentals of Cyber-security systems as well as various security threats and vulnerabilities encountered in it will be discussed. Suitable ML techniques that can be applied to improve the existing cyber-security systems along with research challenges in cyber-security domain will also be discussed.

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REIMAGINING AND RETHINKING ENGINEERING EDUCATION IN INDIA

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Abstract: Indian colleges grant nearly a million engineering degrees annually, flooding the job market with a huge supply of engineers, with skills that have very little demand. Now the country has an excess supply of engineers who are unemployed with many of them unemployable. However, there still lies a huge scope for well trained and skilled engineers.

With growth of world population exceeding 9 billion, basic needs such as energy, food and water, housing, transportation and health will become more acute. The demand for sustainable development will require redefined and innovative engineering talent and leadership. The stage is set for a Renaissance period for engineering education.

A recent report by MIT titled "The Global State of the Art in Engineering Education" states that the future leaders in engineering education will focus on "work-based learning, multidisciplinary programs and a dual emphasis on engineering design and self-reflection."

After centuries of global advancements, India is at crossroads. It is clear that since Independence, India has produced a large number of competent, qualified engineers who have contributed and made an impact in the corporate world internationally. Despite these positive outcomes, a critical analysis of the recent trends is required. The engineering curriculum of the 20th century is no longer sufficient to address the engineering challenges of the 21st century. Increasing complexity and interdisciplinarity of the engineering profession requires equipping engineering graduates with creativity and innovative mind to facilitate the development of novel and effective technological solutions to problems stimulated by change. There is however a disconnect appears among creativity, innovation and engineering.

There has been growing research evidence that followed methods in teaching and learning of engineering are becoming obsolete and do not meet the requirements of future engineering graduates. Educational programs focus excessively on narrow and deep technical specifications, with little or no room in the curriculum for developing the ability to think and act creatively. Unless this disconnect is addressed through holistic changes to engineering education, we risk producing unemployable engineers who will be obsolete immediately after passing out with respect to the rapid change in society.

What needs to be done?

As the nature of technology and industry changes, the education system needs to be responsive and adaptive to the changing demands. Most of engineering schools in India follow a traditional disciplinary department's structure, with curriculum mainly focused on engineering sciences and theories whereas the focus should be on driving the applied side of engineering together with innovation, design, and all the way towards commercialization and entrepreneurship. Following points may be considered for further study and discussion:

1. Engineering is a training of the mind and good engineers learn the methodology to apply analytical skills in problem solving. Students should study the problems of rural areas and should work on the existing technological challenges and issues in these area as a part of the curriculum.
   An engineering college should create great research and scholarship environment so that students and faculty can jointly work in such issues which can create a green platform for the society.
2. Engineering curriculum should be revised with the inclusion of 1 year internship in field of respective branch. If they can understand the real life problems then they can provide solutions to them. Once the R&D bug gets into their head, it will automatically manifest itself in innovative solutions.
3. The correlation of the speed of technological development and socio-economic and infrastructural transformations with human life leaded us to Industry 4.0. Industry 4.0 (or The Fourth Industrial Revolution) is a combination of IIoT (Industrial Internet of Things), cyber–physical systems and artificial intelligence, put together to ultimately make machines capable of making decisions with minimal human intervention.
   It is the time when we incorporate the high end futuristic employable technology skills in tune with the Industry 4.0 so the engineering graduates are ready to deal with the challenges and bugs to be faced by the new revolution.

4. Industrial and entrepreneurial engineering is the need of the hour for sustainable growth of the new economy. More emphasis should be given in our curriculum towards innovation and entrepreneurship so that the students get interested in turning creative new ideas into profit-making opportunities which in turn will create jobs in the society.

Conclusion: For us to become a great and economically powerful nation, it is necessary that we create the environment to bring out creative and innovative mindset in engineering graduates. In absence of such engineers who can create and innovate, we may end up copying innovations from abroad but even to copy a design we need good engineers! The future of India belongs to the younger generation.

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A REVIEW ON TECHNIQUES OF MISDIRECTION ATTACK DETECTION IN WIRELESS SENSOR NETWORK

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Abstract: Wireless Sensor Network (WSN) has been extensively used in recent years due to its popularity as it can be easily deployed as and when required. WSN also find wide range of applications in various areas such as in medical science, military, agriculture, nuclear plants etc. However, the WSN is prone to a wide variety of security attacks such as the misdirection attack. In misdirection attack the malicious node forwards the packet to another path which will take much longer time for the packet to reach the target node. This gives rise to very high network delay and minimum network throughput. Hence development of techniques to detect misdirection attack in WSN is needed essentially. Available literature indicates that very few methods have been proposed to detect misdirection attack in WSN. Each method has some advantages and disadvantages over other methods. In this paper, various techniques to detect misdirection attack in WSN have been critically reviewed. The significance of each technique as well as its merits and demerits has been discussed and compared in the paper.

Keywords: Wireless Sensor Network, Security, Misdirection Attack, Malicious Nodes.

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VISCOMETRIC STYDY OF BINARY MIXTURES CONTAINING PROPIOPHENONE WITH 1-ALKANOLS AT TEMPERATURES 303.15K- 318.15K

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Abstract: The current study works out on Densities 'ρ', and Viscosities of binary mixtures of Propiophenone (PPH) with 1-alcohols [1-Propanol, 1-Butanol, & 1-Pentanol] measured over the entire composition range at temperatures from 303.15K to 318.15K and at atmospheric pressure 0.1MPa. The worked out experimental η data has been used to calculate deviations in viscosity (Δη) by correlating with theories like Grunberg Nissan (d), Hind(H_{12}), Katti –Chowdary (Wvis/RT), Tamura-Kurata(T_{12}) and Gibb's free energy(G^{*E}) activation relations. The deviations in viscosity with the composition and temperature of the mixtures have been discussed in terms of molecular interaction in these mixtures. The parameters of these studied systems were found to be responsive towards molecular interactions. The computed results were fitted with the Redlich Kister equation to estimate the binary coefficients and standard deviation between experimental and calculated data.

Keywords: Density, Deviation In Viscosity, Molecular Interactions.

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ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF *OCIMUM SANCTUM*(P) LEAF ESSENTIAL OILS.

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Abstract: *Ocimum sanctum* also known as *Ocimum tenuiflorum* is commonly known as *Tulsi* or *holy basil* or, the Queen of herbs.There are two kinds of *Ocimum sanctum* available; they are Red or Purple variety called Krishna Tulsi and White or Green variety called Sri Tulsi. Eugenol is the major constituent present in this plant(61.538%). Extracts from the leaves of *Ocimum sanctum* purple were investigated for phytochemical constituent antioxidant and antomicrobial activity. Tests for phenols, flavonoids and antioxidants of *Ocimum sanctum* (P)were conducted and the value of phenols found to be 127.3±1.8mg/gm. The value was compared with that of tannic acid. The flavonoids content of *O.sanctum* was 0.733±0.01mg/gm . The value was compared with quercetin. The antioxidant content was evaluated by using ascorbic acid as standard and the value was 0.921±0.03 mg/gm. The percentage inhibition of DPPH (scavenging activity) was 46.91% . Antibacterial activity by disc diffusion method reveals that essential oils of *Ocimum sanctum* (P)plants was active against the gram positive bacteria (*Staphylococcus epidermidis, Staphylococcus aureus*, *Bacillus paludis*, *Bacillus subtilis*) the gram negative bacteria (*Escherichia coli, Pseudomonas aeruginosa,* and *Shigella flaxinely*, *Enterobacter aerogenes*) and fungus (*Candida albicans*, *Aspergillus fumigatus*, *Aspergillus niger*) This study revealed that extract of leaves *Ocimum sanctum*(P*)* plant comprises effective potential source of natural antioxidants and also antimicrobial activity due to the presence of Eugenol.

Keywords: *Ocimum Sanctum*/Tenuliflorum, Purple, % Eugenol, Total Phenols, Flavonoids, Antioxidants, DPPH Assay, Antimicrobial Activity.

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URBAN ACUPUNCTURE: A TOOL IN MINIMIZING URBAN TRAFFIC CONGESTION IN BAGUIO CITY

AR. JERICO JORDAN A. BERNARDO, AR. IRENE G. FLORENDO

Abstract: One of the most pressing issue found in the city of Baguio is vehicular congestion. A series of consultations with the stakeholders in Baguio City indicates that one of the most pressing concerns with regard to transport in Baguio City is the congestion and vehicle population increase resulting from increasing tourist arrival and the capacity of the population to buy private vehicles. This paper shall attempt to solve the problem of minimizing vehicular congestion along Harrison road caused by boarding and alighting passengers in non-designated areas utilizing the concept of urban acupuncture. The urban acupuncture theory is related to the creation of small-scale neuralgic interventions in the city that can have a direct impact on the urban morphology and life. The researcher identified various points of interest along Harrison road for analysis as to what causes traffic congestion where urban acupuncture concepts may be applied. Strategic points identified by the researcher scattered along Harrison road could be developed as loading and unloading areas employing the concept of urban acupuncture as small scale interventions to the problem of vehicular traffic congestion.

Keywords: Urban Acupuncture, Traffic Congestion, Baguio City, Small-Scale Intervention.

Introduction: The "Acupuncture" system is a medical technique in traditional Chinese medical theory in which thin needles are inserted in the skin at certain points of the body, which are considered to be lines of energy. According to the theory, the body is viewed as a huge system where a small part is connected to the whole. By simplifying this technique, the needles are inserted at certain parts of the body for the purpose of treating various disorders by stimulating nerve pulses. Once this is accomplished, the needles are taken off but the effect continues afterward. (Tang, Chen, Sun, Shen, & Abdel-Hamid, 2015)

The term Urban Acupuncture is coined by the then Curitiba mayor, Brazil, Jaime Lerner. As the name suggests, it involves pinpointed interventions that can be accomplished quickly to release energy and create a positive ripple effect. There are four urban functions targeted as acupuncture points: transport, recycling, affordable housing, and urban parks. (Harjoko, 2009)

Urban transport could be conceived as blood, in the human body, that transports foods and oxygen needed for metabolism process. It maintains all body organs to function properly. In the anatomy of a city, transport maintains the life of the city – especially the economy.

Recycling is an acupuncture point that primarily saves the city from waste hazard and in return, it also generates economic opportunity for the poor. It stimulates remarkably participation of the poor to work together with local government and the private sector to change waste into 'nutrients' that are consumed by the industry. The city grows healthy.

Affordable housing is not confined to the provision of simply housing units in relatively remote areas. It includes the provision of the urban economic activities and public facilities that bring the housing area simply beyond a dormitory place but into a suburban life and environment.

Urban parks are designed, firstly to solve flood problems by resettling the people into a safer place; secondly, it helps the city to increase green ratio.

Atop the hills of Benguet would be a highland retreat in the Cordilleras of northern Luzon, where pine trees and cold breezes are enjoyed by many people wanting to escape the hot and humid climate in the lowlands. Baguio City, the summer capital of the Philippines has made its mark as the premier destination for tourists wanting to experience an all-year-round cool climate.

In recent years, Baguio city has emerged not only as a leading industrial center, but also as a health services center north of Metro Manila. However, rapid urbanization and population growth are straining the city's resources. Such developments are beginning to take a toll on the people's well-being and on the environment. (Estoque & Murayama, 2013) As Baguio City has been facing adverse effects of urban development for quite some time now, there is an upmost need to create solutions in order to save the city from Urban decay and urban sprawl which could be a model for other major cities in the country.
One of the most pressing issue found in the city of Baguio is vehicular congestion. A series of consultations with the stakeholders in Baguio City indicates that one of the most pressing concerns with regard to transport in Baguio City is the congestion and vehicle population increase resulting from increasing tourist arrival and the capacity of the population to buy private vehicles. The challenges in limiting the volume of vehicles on the road are further aggravated by the lack of parking management strategy to effectively reduce private vehicles, and to ensure space for the loading and unloading zones of public utility vehicles; the lack of centralized public transport terminal; the inadequacy of infrastructure for non-motorized transport and public transportation; compliance of public utility vehicles to vehicle emission standards, and; lack of implementing body and authority to manage all transport and traffic operations, rules and standards, engineering, and education of public transport operators (CLUP-Baguio City, 2010-2020) as cited in (Fillone, De Guzman, Rañosa, Fillone, & De Guzman, 2017)

Baguio City has to cope with so many problems arising from its status as a highly urbanized city. One of these are traffic-related problems brought about by the increase in the number of pedestrians and vehicles traversing the city's various road corridors.

Baguio City serves as a major urban center in the North. Public transport is relatively convenient with at least sixteen (16) bus companies servicing the Luzon Island interprovincial from Metro Manila to the city of Baguio. These provide transport services mostly in Metro Manila, Ilocos Region, Cordilleras, and Cagayan Valley to as far as Zambales and Quezon Province. Licensed public utility vehicles that operate specific intra municipality and intercity routes complement the existing provincial bus lines. Within the city, the usual route is from a specific neighborhood or Barangay to the Central Business District and vice versa. Out of town destination reach as far as La Trinidad and other adjoining towns of Itogon, Sablan, Tuba, and Tublay all in Benguet. Registration made by public utility jeepney comprises 71.74% of the motor vehicles registered for public use in the second quarter of 2015. (Fillone et al., 2017)

With this, it is clearly seen that aside from the growing number of privately-owned vehicles within the city, public utility jeepneys is one of the major causes of traffic congestion. Within the major thoroughfares of the city, Harrison road carries a large number of vehicles both private and public where most of the jeepney lines converge to load and unload passengers from different points of Baguio City.

Harrison road, within the Central Business district of Baguio serves as a hub for most jeepney lines within the city. Since PUJs are banned from entering Session road, the heart of the CBD of the city, most people alight from Harrison road in order to access Session road. This then causes a problem along Harrison road of vehicular congestion every time a vehicle drops off or picks up a passenger without utilizing a common drop off point or loading and unloading area. Figure 1 shows a map of the central business district of Baguio where Harrison road is found.

Figure 1: CBD map of Baguio, showing Harrison road highlighted in red.
Retrieved from www.maps.google.com

According to (Tan, T., n.d.) The road sections that need some attention for traffic improvements are: Harrison-Abanao intersection: This area is the heart of traffic circulation at the CBD – the busiest intersection at the CBD which I find the need to re-design the geometric infrastructure and signal time by adjusting cycle and phasing time...

This paper shall attempt to solve the problem of minimizing vehicular congestion along Harrison road caused by boarding and alighting passengers in non-designated areas utilizing the concept of urban acupuncture.
Furthermore, this paper shall answer the following questions:

1. What is the level of adequacy of existing loading and unloading areas along Harrison road?
2. What are the strategic locations possible to be the drop-off and pick-up points along Harrison road?
3. What urban acupuncture concept shall be applied along Harrison road in order to minimize traffic congestion caused by loading and unloading in non-designated areas of the road?

Objectives of the Study: The urban acupuncture concept to be introduced in Harrison road aims not only to minimize traffic congestion but will also encourage and guide other cities with the same situation to introduce a similar solution as well. Furthermore, the main objectives of the study are as follows:

1. To assess the current loading and unloading areas along Harrison road and its implications to vehicular circulation
2. To analyze the possible solutions in minimizing traffic congestion along Harrison road.
3. To analyze urban acupuncture concepts applicable to the current issues along Harrison road.

Scope and Limitations of the Study: The study is focused on minimizing traffic congestion along Harrison road caused by loading and unloading passengers in random points along the stretch of the

road. The selected location for analysis only includes Harrison road within its boundaries from the square shaped pedestrian overpass across Igorot Park to the road's boundary across Sunshine Park.
The creation of strategically located loading and unloading areas along Harrison road shall be guided by the principles of Urban Acupuncture and shall only include analysis of traffic congestion caused by boarding and alighting passengers in random points along the road only. Furthermore, inclusions of site visits, walking tours, supported information from the Comprehensive land use plan and satellite images shall be used to support findings of the study. Figure 2 shows points along Harrison road identified by the researcher that will be examined and analyzed with regards to the study.

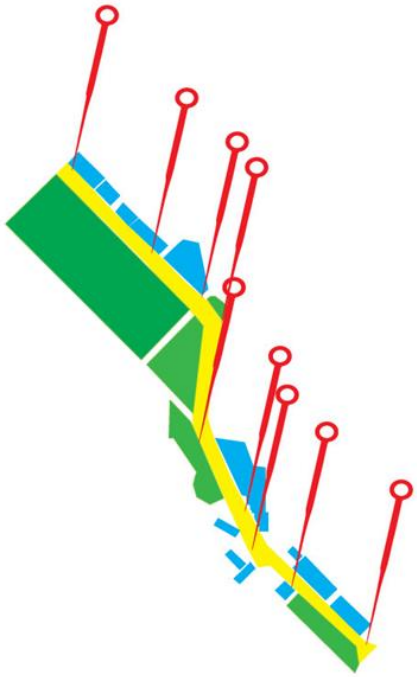

Figure 2: Identified Points of Interest Along Harrison Road Image Created By The Researcher

Further study to explore the depth of the applicability of Urban Acupuncture in minimizing traffic congestion within the city of Baguio considering different factors other than loading and unloading areas shall be conducted in a separate study.

Review of Related Literature:

Urban Acupuncture: Urban acupuncture is originated from an alternative Chinese medical science. This therapy holds that the imbalanced state is the fundamental cause of diseases. By putting the needles on some essential points of the human body, the Qi (energy) could be rebalanced, and the disease will consequently disappear. In this sense, urban acupuncture is a strategy which focused on some small-scale interventions, but aimed at achieve a better urban environment. The small scale interventions are normally fast- making and cost less resources, but the result is long term and profound. (Yimeng, 2015)

The urban acupuncture theory is related to the creation of small-scale neuralgic interventions in the city that can have a direct impact on the urban morphology and life. Citizen's desires are taken into account in a situational and cultural context that focus on the social cohesion of the urban environment ; via the implementation of sustainable key points in the city, a network of interventions is established that would function as cores of potential energy healing the area. (Apostolou, 2018)

Explorations in micro-urbanism challenge the idea that space and size are related terms. Small scale strategic and neuralgic interventions are envisaged as key generators for new spatial conditions and

habits. It is a concept and a strategy to deal with the complexity of the modern urbanity, suggesting a city design process that goes from the micro to the macro.

The basic principle of this urban socio-environmental theory (10) is that the healing of strategic points-parts of the city can operate as cores that gradually heal the whole; it consists of small-scale targeted interventions that progressively transform the larger urban context. The origins of the concept are related to the method of acupuncture: thus, the application of pressure in specific points of the body in order to treat diseases or reduce pain. In a similar way, the urban acupuncture pinpoint areas in need of repair; the sites are chosen after a social, ecological and economic analysis of the wider context and through an interaction with the local community. Alike the action of the healing of the body, the urban acupuncture is a strategy that aims at the relief of the 'body' of the built environment.

The term "Urban Acupuncture" was first stated by a Barcelona based architect and urbanist Manuel de Solà-Morales. "Through the concept of urban acupuncture, Manuel de Sola-Morales tried to solve urban problems through projects of strategic architecture. The concept of urban acupuncture refers to urban interventions that are healing, can be built in a short time and spontaneously able to improve the surrounding environment. (Tang et al., 2015) In 1981, short after the theory of urban acupuncture was stated, Oriol Bohigas, who was at that time the head of Urban Planning Department of Barcelona did an urban acupuncture project in Barcelona. Oriol Bohigas suggested that the city should revitalize through reconstructing several small scale public open spaces, such as parks and squares. During the period from 1980 to 1987, nearly 100 small scale public open spaces were revitalized through urban acupuncture with very low cost. These spaces activated not only themselves but also the surrounding area. They acted as catalysts for the overall development of the city of Barcelona.

By its nature, Urban Acupuncture is pliant, organic and relieves stress and industrial tension in the urban environment - thus directing the city towards the organic: urban nature as part of nature. Urban Acupuncture produces small-scale, but ecologically and socially catalytic development on the built human environment. (Casagrande, n.d.) The acupuncture takes place in the "things that mattered" in the city, they are in small scale. (Yimeng, 2015)

Manuel de Solà-Morales, Jaime Lerner, Marco Casagrande and Casanova & Jesus Hernandez tend to hold different understanding and importance on the term of urban acupuncture. Manuel de Solà-Morales treats the city as a skin with texture and he pays attention to where to locate the therapy. More important for him, is not the scale, but the whole interdependent system. For Jaime Lerner, he concerns more about the social strategies that concerned to people's participation and the profound meaning of making urban acupuncture. And for Marco Casagrande, he treated the city as an organic system and the architecture is only a part of it as the nature would occupy the urban fabric as acupuncture. More specifically, Helena Casanova &Jesus Hernandez relates the urban acupuncture to the public spaces, and time, participation, place making are the strategies to achieve it. (Yimeng, 2015)
But all of these theories based on urban acupuncture share a common line, by applying small scale urban interventions in potential urban areas, to draw effects on the maximized urban skin.

Normally the urban acupuncture works in a place where facing a contradiction, with the coexistence of the old and the new, with the traffic problem brought by the modern life, with the fragments left by the deconstruction or the border between the developed and the undeveloped area.

Case Studies:
Bus Rapid Transport, Curitiba, Brazil: This bus network consists out of buses with a high carrying capacity, which make use of separate bus lanes. Bus stops are replaced by bus stations, in which one can pay in advance and offer boarding on the same level. The BRT connects the underground transportations networks with the street level transport networks. The system is worldwide recognized as a great solution and has been implemented in 126 cities around the world. (Hoogduyn, 2014)

According to (Lerner, 2014) "When we were implanting one of the most important improvements in Curitiba's transit system, Bus Rapid Tran- sit, stepless boarding was essential." Problems on public transport as an application of urban acupuncture were addressed providing BRTs in strategic locations in the city. But it was equally important to make fare-paying and boarding/disembarking quick and agile. So it was essential that passengers pay before getting on the bus and that boarding/disembarking be stepless, on the same level of the platform.

Payment was easily resolved with a turnstile at the entrance of the tube station. But the boarding/disembarking procedure also had to be perfect, to prevent slowdowns or bottlenecks and to avoid accidents. An impeccable connection between bus and tube was essential. (Lerner, 2014)

Parklet: A parklet is a sidewalk extension that provides more space and amenities for people using the street. Usually parklets are installed on parking lanes and use several parking spaces. Parklets typically extend out from the sidewalk at the level of the sidewalk to the width of the adjacent parking space. Parklets offer a place to stop, to sit, and to rest while taking in the activities of the street. In instances where a parklet is not intended to accommodate people, it may provide greenery, art, or some other visual amenity. (Tang et al., 2015)

As urban acupuncture is aiming at curing the city from a micro scale, multi-participation is one of hinge. The real needs of residents should be considered and the motivation of other roles should also be taken into account. Thus the urban attractions should be designed to activate the citizens. This application of urban acupuncture in installing parklets spark community involvement as well creating a visual attraction in a once dull street curb.

Urban Traffic Congestion: The fundamental cause of congestion is the friction or mutual interference between vehicles in the traffic flow. At higher levels of traffic, however, every additional vehicle interferes with the circulation of the others: in other words, the phenomenon of congestion appears. A possible objective definition, then, would be: "congestion is the situation where the introduction of an additional vehicle into a traffic flow increases the journey times of the others" (Thomson and Bull, 2001) as cited in (Bull, 2003)

The demand for road space arises from the universally observed desire of individuals to own and use a motor vehicle. As incomes increase and technological advancements reduce the real cost of producing a motor vehicle, more and more persons find the financial means for owning and using a motor vehicle. (Kumarage, 2004) A good transportation system is an important selling point to communities that desire to attract development that provides for employment and growth of a city. If transport costs due to congestion increase, goods and services produced within that city tend to increase in costs thus losing competitiveness in international markets. Efficient transportation access is therefore a very important consideration as it has a direct impact on sound and sustainable economic growth and productivity. According to Eddington (2006), an effective transportation system is significantly important in sustaining economic growth in contemporary economies since it provides linkages between different parts of the country and the global world. (Harriet, Poku, & Kwabena Emmanuel, 2013)

Eddington (2006) cites adequate transport network, traffic management and control system and effective, efficient and reliable mass transit as key factors that affect urban transportation system. (Nadiri 1998) postulates that investment in adequate transport infrastructure improves transport efficiency in terms of increased productivity and continue that transportation infrastructure involves good road network, adequate bus stops, parking areas with traffic signals. (Shapiro et al, 2002) assert that mass transit is prerequisite for ensuring efficient and effective transportation system in urban areas in terms of energy conservation reduced traffic congestion and environmental preservation. They argue that effective mass transit system is underpinned by availability, accessibility, and reliability of buses. Effective traffic management and control system is key to ensuring effective transportation system in the

urban areas. This involves management and control of road signals, road space, parking space and road users (Arasan 2012; Jones 1999) as cited in (Harriet et al., 2013)

Baguio City has to cope with so many problems arising from its status as a highly urbanized city. One of these are traffic-related problems brought about by the increase in the number of pedestrians and vehicles traversing the city's various road corridors. (Tan, T. n.d.) The depth of these problems and the corresponding approaches on how to deal with it are foreign to many, since the problem is an evolution of our present generation and will continue to evolve in the coming years. The gravity of traffic problems was uncommon in the past.

The four pillars or the 4Es in traffic management must be adopted. These are engineering, enforcement, education, and enactment of traffic laws. The absence of one will surely have an adverse effect on traffic movement.

Chief Inspector Oliver Panabang, BCPO-TMB head, said based on data obtained from the Land Transportation Office (LTO) Baguio City, the number of registered motor vehicles increased to over 57,600 last year as to the over 44,500 registered vehicles in 2017. (Sunstar, 2019) Based on studies, existing city roads and streets could only accommodate 10,000 to a maximum of 15,000 motor vehicles to ensure the smooth flow of vehicular traffic aside from making available spaces to accommodate vehicles that will park. These numbers show a major issue on the capacity of the road networks of the city in order to provide a better transportation infrastructure for the citizens which is only one of the various factors that could cause traffic congestion. According to (Bull, 2003) Faulty design or maintenance of road systems causes unnecessary congestion… …bus stops located precisely where the road width becomes narrower, and other shortcomings which disturb a smooth traffic flow. And in the cultural aspect of riding a jeepney in most parts of the country, people tend to get picked up or dropped off from jeepneys almost in any point along the road which causes congestion since traffic slows down every time a vehicle stops along the road in order to load or unload passengers.

Results:

1. **Adequacy of Loading and Unloading Areas Along Harrison Road:** As this study is limited to loading and unloading areas along Harrison road, the researcher conducted an analysis of points identified in order to assess the current condition of loading and unloading areas that cause traffic congestion within Harrison road. These points are seen in figure 3

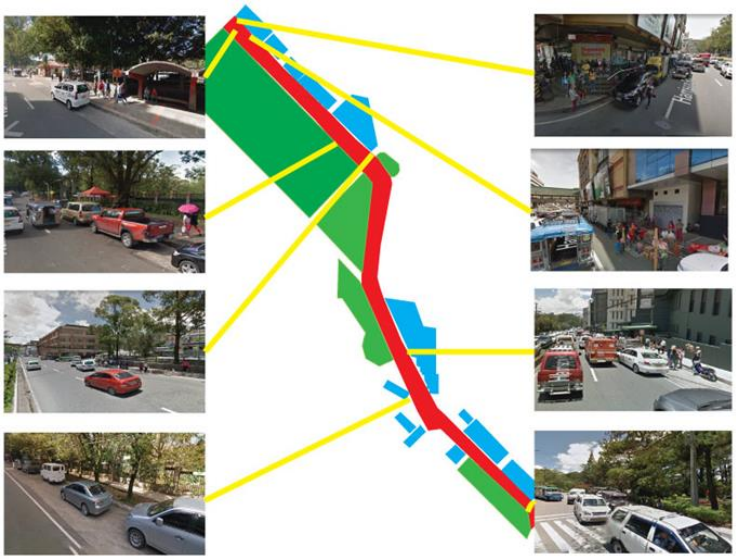

Figure 3: Photo Map of Harrison road, Baguio City Images from www.maps.google.com

Existing loading and unloading areas along the stretch of Harrison road would be seen beside University of the Cordilleras, Baguio National High School. Both drop off areas are located on the southern portion of the road which is not enough to cater to the one-kilometer long road where numerous institutions and establishments are found.

The loading and unloading area found beside the University of the Cordilleras seen in figure 4 shows how the utilization of the area is left to a nil where instead of PUVs entering the area to drop off or pick up passengers, they utilize the road adjacent to the drop off area disrupting the flow of traffic as they do their stops.

Figure 4: Loading and Unloading area beside the University of the Cordilleras.
Retrieved from www.maps.google.com

On the other hand, the loading and unloading area near the Baguio City National High School also shows evidence of misuse since the area has been used as a parking area for private vehicles during most times of the day seen in figure 5.

Figure 5: Loading and unloading area beside Baguio City National High School
Retrieved from www.maps.google.com

The researcher identified various points of interest along Harrison road for analysis as to what causes traffic congestion. Since only two drop-off areas are found along Harrison road and are evidently misused, most vehicles traversing Harrison road tend to drop off and pick up passengers in random points along the road. One common area used as a loading and unloading area is the intersection on the southern tip of the road across Sunshine park that creates a bottleneck seen in figure 6, another beside Baguio Patriotic High School seen in figure 7, the same issue where vehicular circulation is disrupted

due to PUVs stopping on the road to allow passengers to board and alight could be seen beside the vacant lot of prime hotel and the portion beside Plaza Garden seen in figures 8 and 9 respectively.

Figure 6: Section of Harrison Road Across Sunshine Park used as a Loading and Unloading Area. Retrieved from www.maps.google.com

Figure 7: Section of Harrison Road Beside Baguio Patriotic High School used as a Loading And Unloading Area. Retrieved from www.maps.google.com

Figure 8: Section of Harrison Road Beside The Vacant Lot Used as A Loading and Unloading Area. Retrieved from www.maps.google.com

Figure 9: Section of Harrison road beside Plaza Garden used as a loading and unloading area. Retrieved from www.maps.google.com

One of the major causes of traffic congestion along Harrison road could be found in front of Tiong San Bazaar where not only is the portion of the road being used as a loading and unloading zone but also as a staging area for supplies used by the business establishment. Seen in figure 10 are supply trucks parked along the road as well as PUVs loading and unloading passengers causing traffic congestion in that area.

Figure 10: Section of Harrison Road Beside Tiong San Bazaar used as a Loading and Unloading Area and A Staging area for Supplies. Retrieved from www.maps.google.com

Besides the identified points of interest by the researcher, it has been observed that random points along the whole stretch of Harrison road have also been used as loading and unloading areas not only by PUVs but private vehicles as well. Seen in figure 11 and 12.

Figure 11: Section of Harrison Road Fronting Melvin Jones Grand Stand used as a Loading and Unloading Area. Retrieved from www.maps.google.com

Figure 12: Section of Harrison Road Fronting Ganza Parking Lot Used as a Loading and Unloading Area. Retrieved from www.maps.google.com

2. **Possible locations of Drop off areas along Harrison Road:** Based on the observations of the researcher along Harrison road considering public and private lands and common loading and unloading areas used within the road, strategic points have been identified to be developed into loading and unloading areas in order to minimize vehicular traffic congestion along Harrison road. These areas could be seen in figure 13.

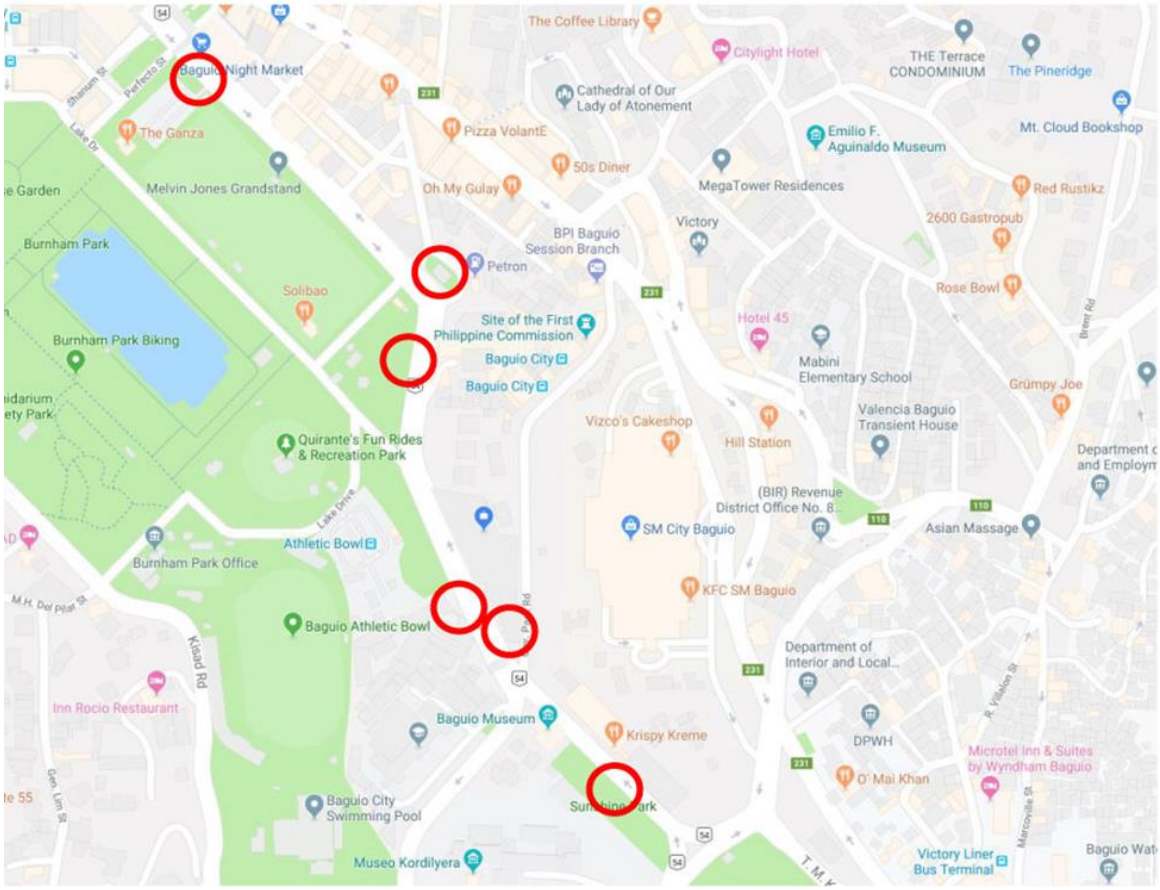

Figure 13: Points Identified by the Researcher as Possible Locations of Loading and Unloading Areas. Retrieved from www.maps.google.com

Public lands have been considered by the researcher in identifying areas that could be developed into a more functional loading and unloading zone in order to minimize traffic congestion along Harrison road. Strategic points have been located in various areas along the road since the loading and unloading areas shall not only cater to private vehicles and taxis but also a numerous jeepney lines coming from different parts of the city all converging within Harrison road. These jeepney lines could be seen in table 3.01.

Furthermore, according to (Fillone et al., 2017) the highest volume of vehicles in the CBD area of Baguio City takes place in the afternoon peak hour from 04:00 p.m. to 05:00 p.m. with a value of 11,289 units. Private cars comprise of 28% (3,179 units) of the total number of vehicles during peak hours, taxis: 27% (3,070 units), jeepneys: 23% (2,548 units). It can be assumed that a percentage of these units could be found along Harrison road which needs to be catered by strategically located loading and unloading areas.

The possible locations identified by the researcher could be found fronting Sunshine park, Veterans park, Ganza parking lot, and Plaza garden, existing loading and unloading areas fronting the University of the Cordilleras and Baguio City National High school shall be identified for improvement. Seen in figures 14, 15, 16, 17, and 18 respectively.

Figure 14: Possible Location of Loading and Unloading Area Fronting Sunshine Park
Retrieved from www.maps.google.com

Figure 15: Possible Location of Loading and Unloading Area Fronting Veterans Park
Retrieved from www.maps.google.com

Figure 16: Possible Location of Loading and Unloading Area Fronting Ganza Parking Lot
Retrieved from www.maps.google.com

Figure 17: Possible Location of Loading and Unloading Area Fronting Plaza Garden
Retrieved from www.maps.google.com

Figure 18: Loading and Unloading Area Fronting the University of the Cordilleras for Improvement
Retrieved from www.maps.google.com

Figure 19: Loading and unloading area fronting Baguio City National High School for improvement. Retrieved from www.maps.google.com

3. Urban Acupuncture Concepts: Finnish scholar Marco Casagrande describes urban acupuncture as a "cross-over architectural manipulation of the collective sensuous intellect of a city." Urban acupuncture is an urban renewal approach that revivifies cities through targeted, small-scale urban intervention. By applying small-scale intervention to such areas, the larger-scale urban environment or city operation will be affected and thus some problem to the city will be solved. Once the action has been taken, the effect to the larger-scale urban environment will continue. Urban acupuncture is intended to produce small-scale but socially catalytic interventions in the urban fabric. (Tang et al., 2015) The urban acupuncture is a strategy which focused on small scale interventions but aimed to achieve a better urban environment. The urban acupuncture concerns mainly two dimensions--- a small scale intervention and a big scale effect. (Yimeng, 2015) In employing the concept of urban acupuncture as a small scale intervention of improving loading and unloading areas along Harrison road, this, in turn, would create a big scale effect in improving vehicular circulation around the central business district of the city that would create opportunities of introducing the same concept in other problematic areas in Baguio City.

Small scale strategic and neuralgic interventions are envisaged as key generators for new spatial conditions and habits. It is a concept and a strategy to deal with the complexity of the modern urbanity, suggesting a city design process that goes from the micro to the macro. (Apostolou, 2018) The basic principle of this urban acupuncture is that the healing of strategic points-parts of the city can operate as cores that gradually heal the whole; it consists of small scale targeted interventions that progressively transform the larger urban context. Furthermore, (Apostolou, 2018) suggests, this approach, localized and communitarian, uses the methods of punctual manipulation of the urban energy flows in order to promote ecologically sustainable development and reinforce the social coherence. The perception of the city as a living organism is therefore integrated with the notion of environmentalism and ecological urbanism, and correlated to the participatory and the pop-up urbanism.

Conclusions: On the basis of the analysis of the results found in this study, the following could be concluded; Vehicular traffic congestion along Harrison road could be attributed to various factors but one of the major causes included in this study is the disruption of vehicular circulation due to the misuse and lack thereof proper loading and unloading areas where vehicles stop at random points along the road to allow passengers to board or alight which creates a chain reaction where vehicles behind them slow down or stop therefore creating traffic congestion in various areas of the road. The existing loading and unloading areas along Harrison road found fronting the University of the Cordilleras and Baguio City National High School is therefore inadequate to cater to users of all institutions and

establishments found along Harrison road since no drop off areas are provided in the northernmost and southernmost part of the road.

Strategic points identified by the researcher scattered along Harrison road could be developed as loading and unloading areas employing the concept of urban acupuncture as small scale interventions to the problem of vehicular traffic congestion. These areas were identified to cater to users of different institutions and establishments with high traffic. A loading and unloading area fronting Sunshine Park could cater to users of the University of the Philippines, Sitel, Teleperformance, S.M. Baguio, and other establishments found in the southern part of the road. Veterans park area could cater to users going to S.S.S., Baguio Patriotic High School, access to Session road and establishments in that area. The area fronting Ganza parking lot could be developed in order to cater to users wanting to access Abanao, Burnham Park, and other establishments in the area.
The area fronting Plaza Garden could be developed into a drop-off area for users wanting to access lower Session Road, Magsaysay, Maharlika and other establishments in the area.

Existing loading and unloading areas fronting the University of the Cordilleras and Baguio City National High School could be improved to encourage drivers to use the area properly and not as how it is in the present.

In proposing strategically located loading and unloading areas, the vehicular circulation along Harrison road shall be able to move freely without having to deal with vehicles dropping off or picking up passengers in the middle of the road.

This study does not only establish the need for small scale interventions in order to alleviate Harrison road from vehicular congestion but also looks into recommending other interventions to further improve the situation based on the study and other readings done by the researcher. Establishment of PUJ terminals in cluster: The city must look into the possibility of consolidating overlapping routes and reduce the volume of some PUJs. Allocation of PUJ loading and unloading zone, especially for PUJs that do not have terminals, must be established.

For us to have a better traffic climate, concerted efforts by all stakeholders are needed, not only by our city officials but also of motorists, pedestrians, and other agencies like the DPWH. Strict policy implementation and the participation of various stakeholders in following traffic laws are essential in improving traffic flow not only in Harrison road but in numerous areas within the city as well.

The city should have a traffic master plan. This will guide city planners on what to do to all present and future traffic concerns, like the expected increase in the number of vehicles coming in and out of Baguio especially with the completion of the highway bridging Manila to Rosario, La Union. The plan must be comprehensive, such that it can foresee traffic problems and could provide appropriate solutions to all of Baguio City's traffic concerns.

There is a need to create a Traffic and Parking Management Office (TPMO), which will take charge of all traffic concerns of Baguio. A similar proposal was lodged at the city council in the past but it remains pending because of budget constraints and overlapping of functions with that of the Land Transportation Office and Land Transportation Franchising and Regulatory Board. Once established, the TPMO will set up a "traffic control center," where traffic movement in all roads at the CBD will be monitored through the installation of closed-circuit television cameras. A command center for all traffic lights and traffic personnel will also be in place. The realization of this is the direction of any city that continues to progress.

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A METHOD OF MAHLER TO PROVE TRANSCENDENCE

VICHIAN LAOHAKOSOL

Abstract: Using an old approach of Mahler, it is proved using the Thue-Siegel-Roth theorem that the decimal expansion

$$0{:}13579\ 11\ 13\ 15\ 17\ 19\ 21\ 23\ 25\ 27\ 29\ 31\ \cdots$$

is a transcendental number but is not a Liouville number.

Keywords: Transcendental Number, Decimal Representation, Thue-Siegel-Roth Theorem, Liouville Number.

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THE OPTIMIZED ENERGY RESOURCE UTILIZATION IN WIRELESS NETWORKS WITH TAXONOMY OF HYBRID PROTOCOL HIERARCHY

RADHIKA.GOLLAPALLI, P.LAKSHMI PRASANNA, T.SWATHI

Abstract: The key performance metrics in wireless sensor networks are both network lifetime and an average time required to report an event reliably. The optimal solution must be taken into account to meet these metrics. Considering energy-latency constraints in sensor networks, we have developed a cluster architecture using mobile agents to detect the yarn break in spinning machine in textile industry. We have used the latency improved MAC layer protocol to access the channel in the cluster and also used energy efficient cluster formation algorithm based on residual energy of the sensor node. This protocol can handle multiple event messages efficiently. And, we mainly focused on simulating the behavior of mobile agents for information retrieval from a wireless sensor network in a event driven and poll driven wireless sensor network model.

Keywords: Latency, MAC Protocol, Energy Efficiency, Sensor Node, Mobile Agent.

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PHOTOLUMINESCENCE SPECTRA OF LiI-AgI-B_2O_3 GLASSES DOPED WITH MnO

K. SREE LATHA, K.SHOWRILU, C.A.JYOTHIRMAYEE

Abstract: A study of the electrical properties of the glasses is of considerable importance because of the insight it gives into the conduction mechanism process-taking place in them. In fact, the electrical properties of the glasses are to a large extent controlled by the structure, composition, and the nature of the bonds of the glasses. The investigation of the changes in the electrical properties of glasses with controlled variation of chemical composition, doping etc., is of considerable interest in the application point of view. During the last few decades a large variety of inorganic glasses have been developed with an attempt to achieve suitable electrical, optical and mechanical characteristics. These characteristics are associated with the improved physical properties such as electrical resistance, mechanical strength, glass transparency, and their ability to accept transition metal ions for their use in solid-state devices. Investigations on the spectroscopic properties such as optical absorption, infrared spectra, electron spin resonance and photoluminescence can be used as probes to throw some light on the structural aspects of these glasses. Such studies may facilitate for explanation of pre assessment over the valance states of manganese ions and their coordination in the glass network; such information will facilitate the analysis of the results of electrical properties quantitatively.

Study of electrical properties of solid electrolytes has received wide attention due to their potential applications in solid state ionic devices such as fuel cells, gas sensors, electrochemical capacitors, electro chromic displays, analog devices, cathodes in electro chemical cells, smart windows etc. The conductivity of LiI–AgI mixed glasses especially, has been the subject of extensive investigation in recent years as a quest for new solid electrolytes with super ionic properties. Further, the transition metal ions like Manganese are very interesting ions to probe in the glass networks because their outer d-electron orbital functions have rather broad radial distributions and their responses to surrounding actions are very sensitive; as a result these ions influence the electrical properties of the glasses to a substantial extent.

Keywords: Methods Adopted In Recording (A) Absorption (B) Excitation (C) Photoluminescence Spectra.

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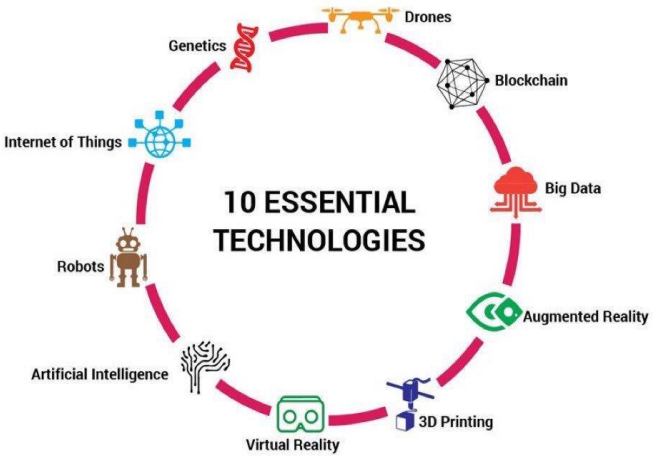
THE EMERGING TECHNOLOGIES THAT WILL CHANGE THE WORLD

M.L.S.H.GAYATRI, B.L.PRATHYUSHA, K.MOUNIKA CHANDRA

Abstract:

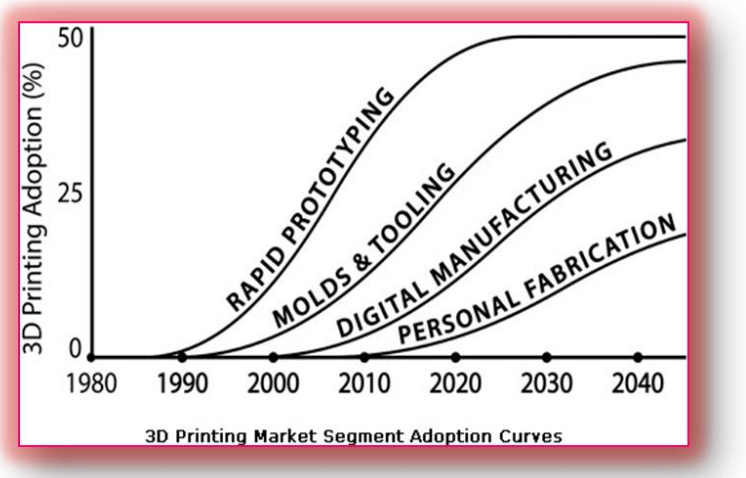


Among all these technologies, we would like to mention 3 technologies which are 3d printer,virtual reality and augmented reality ,block chain.

3D Printer: In recent years, 3D printing has become possible thanks to 3D printers. 3D printers follow the same principle as 2D printers .But instead of printing like 2D printers on paper ,the 3D printers has taken a step forward to print the objects by super imposing thin layers of materials.

3D printers used for several manufacturing moulds such as making jeweleries , ABS plastic, glass filled polyamide, silver, steel, wax etc.

3D printing is becoming popular in those products such as models of art and dolls in many shapes



Virtual Reality and Augmented Reality: **Virtual Reality (VR)** literally makes it possible to experience anything, anywhere, anytime. It is the most immersive type of reality technology and can convince the human brain that it is somewhere it is really not.

ISBN 978-93-86435-95-8

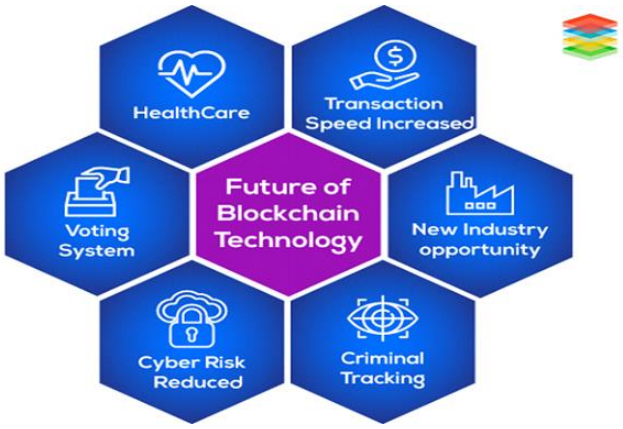
Augmented reality is a technology that works on computer vision based recognition algorithms to augment sound, video, graphics and other sensor based inputs on real world objects using the camera of your device.

Augmented reality	Virtual reality
Augmented reality (**AR**) adds digital elements to a live view often by using the camera on a smart phone.	**Virtual reality** (**VR**) implies a complete immersion experience that shuts out the physical world.

Block Chain: The block chain is a technology for storing information, transparent, secure and operating without a central organ. It is a kind of digital data management. The block chain can be seen as a kind of account book or register that contains a list of all exchanges made between users.

The block chain is often wrongly confused with Bit coin, but Bit coin is a crypto currency that uses the block chain to ensure traceability of transactions.

Thus a user can only use his bit coins with a single recipient corresponding to a single transaction.



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ALLELOPATHIC POTENTIAL OF PAWPAW (*CARICA PAPAYA*) ON BACTERIAL WILT AND YIELD OF TOMATO

LAWAL SULAIMON ABIDEMI

Abstract: Pawpaw (Carica papaya) has been reported to have allelopathic effect on other plants. In this study, effect of pawpaw and pigweed intercroppedtomato (anum lycopersicon L.) on disease incidence, severity of bacterial wilt, growth and yield of tomato was evaluated. In vitro study on growth inhibition of Ralstonia solanacearum causing bacterial wilt of tomato using root extract of pawpaw, pigweed and tomato was also conducted. The study showed that intercropping tomato with pawpaw at spacing of 50cm apart (T-Pw 50) significantly reduced (P<0.005) disease incidence by 46.6%, and disease severity by 61.4 % when compared with sole tomato (ST). Plant height (38,9cm), number of fruit/plant (26.5) and fruit yield (26.5 t/ha) of T-Pw 50 were significantly higher than plant height (17.2 cm), number of fruit/plant (8.0) and fruit yield (1.2 t/ha) of ST. Aqueous extract of root of pawpaw inhibited growth of R, solanacearum at 3% (1.7cm) and 5% (5.0 cm), while no inhibition was observed in root extracts of pigweed and tomato. it was concluded that intercropping of tomato with pawpaw was effective in reducing incidence and severity of bacterial wilt, and increased growth and yield of tomato by: allelopathic effect through the exudates produced by the root of pawpaw, and through physical barrier produced by the pawpaw plant against the spread of R. solanacearum. However, it was recommended that tomato should be intercropped with pawpaw or plant with allelopathic effect in order to reduce the incidence of bacterial wilt of tomato, and increase the growth and yield of tomato.

Keywords: Allelopathy, Pawpaw, Pigweed, Bacterial Wilt of Tomato, *R. Solanacearum.*

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HYGIENE PERSONAL AND SCABIES INCIDENCE AMONG ISLAMIC BOARDING SCHOOL: A CROSS SECTIONAL STUDI IN JEMBER, INDONESIA

KHAIDAR ALI, INDAH NINGTIYAS HIDAYATI

Abstract: *Introduction:* Scabies, skin disease caused by infestation and sensitization of *Sarcoptes Scabei*, is neglected tropical disease that infected 130 million populations annually. It causes lesion and itchy sensation, in which secondary infection by *Streptococcus* and *Staphylococcus aureus* caused serious illness. Scabies is commonly found in low hygiene and sanitation level in population, in which high scabies cases in Indonesia is contributed by Islamic Boarding School (IBS). IBS is islamic school with dormitory system that the student called santri and the main course is islamic religion and science. In 2014, total IBS in Indonesia is 14,798.

Pos Kesehatan Pesantren or Health Unit (HU) of IBS is made by Health Ministry of Indonesia to control and manage disease among santri, in which not all IBS have HU. In Jember, total IBS is reported 557 IBS, and total HU is reported 8. The total santri is approximately 208,280 where the scabies case is reported 526 cases in 2015. In addition, Health Office rarely monitors scabies and their risk factors among santri. Therefore, study of scabies and their risk factors considering the availability of HU in Jember is needed to create appropriate policy to control scabies.

Objectives: To analyze the causality between hygiene personal and sanitation with scabies incidence in Jember, Indonesia.

Methodology: This study employed observational analytic, where the design is cross-sectional. This study was conducted in Ajung Sub-district, Jember in April-September 2016. The total sample is 262 santri. A multistage randomize sampling was performed with proportional probability approach. The calculation of total sample referred to *Isaac & Michael* formula that found 91 samples among population. Scabies diagnosis was performed by Nurse.. Moreover, Stata 13 was used to analyze data, and the data were tested coefficient contingency. The author also analyzed the Prevalence Ratio to acknowledge the causality.

Results: The scabies case among santri is higher in IBS without HU with 68.08%, in which 91.84% scabies incidence occurs in low sanitation level. In addition, 100% santri with high level of hygiene personal did not suffer scabies. Based on statistical test, hygiene personal and sanitation correlated to scabies ($P< 0.05$). Furthermore, the Prevalence Ratio of hygiene personal and sanitation toward scabies is 5.09 and 2.42, respectively.

Conclusion: Hygiene personal and sanitation is risk factor of scabies incidence, where HU is essential aspect in IBS to prevent and control disease. Therefore, The Government of Jember should collaborate with Health Office to promote Health Unit program among all IBS.

Keywords: scabies, hygiene personal, sanitation, islamic boarding school, pos kesehatan pesantren.

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PARTIAL PURIFICATION AND CHARACTERIZATION OF EXOPOLYGALACTURONASE FROM B.AXARQUIENSIS

DR. A.PADMAVATHI, DR. M. RAGHU RAM

Abstract: An exopolygalacturonase from *B.axarquiensis,* identified by16s rRNA sequencing (new addition to the existing polygalacturonase producing bacteria) was partially purified by Ammonium sulphate precipitation using pectin medium supplemented with orange peel. The enzyme had a molecular weight of 66,000 Daltons upon SDS- PAGE and biochemical characterization of it has shown that the enzyme have an optimal pH of 7.2 and an optimal temperature of 37°C.

Synthesis increased following induction by orange peel and beef extract repressed by glucose. It finds application in fruit juice clarification such as sapota and mango. The increase in juice yield was 31.2% and 25.8% for sapota and mango respectively.

This article mainly emphasizes,

1. Screening of polygalacturonase producing bacteria from commercial crop field soils.
2. Its characterization and application in fruit juice clarification.

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A STUDY ON THE GROWTH PATTERNS OF CHILDREN ATTENDING ANGANWADI, IN ELURU, WEST GODAWARI DISTRICT. AP. INDIA.

DR. P. JYOTHI KUMARI

Abstract: Prevalance of Malnutrition in India is found to be greater then 43% among children. Intergenerated poverty and poor Nutrition are the root cause of malnutrition in our country as there is an increased population.Childhood is the age (1-5yrs) was found to be crutial for physical and cognitive development that controls the future life of children. Hence it is the responsibility of not only the parents but also community and Government should take an active role in preventing malnutrition.

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BALANCED DIET- A HEALTHY WAY FOR YOU

DR. M. PADMAJA, SR. SUNILA RANI. P

Abstract: To live one must eat. But, we not only eat to live, what we eat also affects our ability to keep healthy, do work, to be happy and to live well. Knowledge of what to eat and in what quantities is a prerequisite to the healthy and happy life. Good nutrition requires a satisfactory diet, which is capable of supporting the individual consuming it, in a state of good health by providing the desired nutrients in required amounts. It must provide the right amount of fuel to execute normal physical activity. If the total amount of nutrients provided in the diet is insufficient, a state of under nutrition will develop. Nutrition is one key to developing and maintaining a state of health that is optimal for you. In addition, a poor diet coupled with a sedentary lifestyle is known to be risk factors for life- threatening chronic diseases and death: Heart disease, Stroke, Hypertension, Diabetes and some forms of Cancer. The major health problems are largely caused by excessive energy intake and not enough physical activity. Proper Nutrition is the basis for optimum health. Proper Nutrition is the basis for optimum health and well being. Modern medicine focuses on treating a symptom rather than the root cause. Food not only provides the energy needed to function in our daily lives but constantly supplies the nutrients which are required to build and regenerate body tissue, bone, muscle, fat and blood. The nutrients in food are also necessary to produce substances for the chemical processes that take place in our bodies millions of times a day.

Keywords: Balanced Diet, Nutrition, Energy, Deficiency Disease.

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NEW ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR SIMULTANEOUS ESTIMATION OF ALOGLIPTIN AND METFORMIN BY RP-HPLC METHOD IN BULK AND SOLID DOSAGE FORMS

K.NAGARAJU, V. NAGALAKSHMI, G.SRINIVAS RAO

Abstract: A new, simple, precise, accurate and reproducible RP-HPLC method for Simultaneous estimation of bulk and pharmaceutical formulations. Separation of Alogliptin and Metformin hydrochloride was successfully achieved ODS C18 (4.6×250mm,5µm,Hypersil) or equivalent in an isocratic mode utilizing Acetonitrile :water : Methanol (70:20:10) v/v at a flow rate of 0.8ml/min and elute was monitored at 278nm, with a retention time of 1.336 and 2.186 minutes for Metformin and Alogliptin respectively. The method was validated and their response was found to be linear in the drug concentration range of 1µg/ml to5µg/ml for Metformin and 1µg/ml to 5µg/ml for Alogliptin. The values of the correlation coefficient were found to 0.986 for Metformin hydrochloride and 0.967 for Alogliptin respectively. The LOD and LOQ for Metformin hydrochloride were found to be 0.174 and 0.527 respectivly. The LOD and LOQ for Alogliptin were found to be 0.120 and 0.3099 respectively. This method was found to be good percentage recovery for were found to be 99 and 100 respectively indicates that the proposed method is highly accurate. The specificity of the method shows good correlation between retention times of standard with the sample so, the method specifically determines the analyte in the sample without interference from excipients of tablet dosage forms. The method was extensively validated according to ICH guidelines for Linearity, Accuracy, Precession, Specificity and Robustness.

Keywords: Alogliptin And Metformin Hydrochloride, High Performance Liquid Chromatography.

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A PILOT STUDY ON THE MANAGEMENT OF EMU FARMING IN SELECTED AREAS OF WEST GODAVARI DISTRICT, A.P

R.INDIRA, K.S.V.K.S. MADHAVI RANI, N. LAKSHMI PRASANNA, N.NIRMALA, SK. MASARAT JAHA BEGAM, D. HIMA BINDU

Abstract: Emu (*Dromius novaehollandiae*) is a rare and interesting species with unique attributes and habits. Emu farming will be a booming agri-business due to their benevolent donations to the human race viz. pain relieving oil, red healthy meat, soft, supple leather and gorgeous feathers. Hence this study was conducted to know the management practices followed by the emu farming entrepreneurs in West Godavari district of Andhra Pradesh. Emu farming has become commercial rearing in India. It promises a long-term return as compared to the initial investment. Emu farming is basically just like Poultry. The reason for the growth of Emu farms today is the increasing demand for the bird meat and oil, which is believed to have medicinal properties, especially for treating joint pains and also high economic value for their eggs, skin and feathers. This study includes the infrastructural and live stock management administrated in three groups of Emu farms. This gives the baseline data like the characteristics of study, the general management method adopted in Emu farming, the infrastructural facilities to be provided for the Emu birds. Estimation of live stock numbers, and their management in captivity, the composition of feed, feed timings, types of feeds and method of feeding , the disease prevalence, prevalence rates and then prevention and treatment in all study sites.

Keywords: Emu, Oil, Feed, Disease, Management.

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BENEFITS OF MORINGA LEAVES IN ANAEMIA

M. VINEETHA

Introduction: Moringa oleifera is a fast growing, drought resistant tree of the family Moringaceae, native to tropical and subtropical regions of South Asia. Common names include moringa, drum stick tree, horseradish tree, and ben oil tree or benzolive tree.

Aim: To assess the nutritional benefits from Moringa leaves which helps women especially during pregnancy and adolescent age?

Nutritional Importance: Moringa oleifera is a plant that is often called the drumstick tree. Moringa has been used for centuries due to its medicinal properties and health benefits, it also have antifungal, anti-viral, anti-depressant and anti-inflammatory properties. Moringa contains a variety of proteins and vitamins. Moringa contains many helpful compounds such as : vitamin A ,vitamin B1 , vitamin B2 { riboflavin, niacin} , vitamin B6 , folate, ascorbic acid { vitamin C } , calcium ,potassium , magnesium , phosphorous , zinc . It is also extremely low in fats and contains no harmful cholesterol.

Review of Literature: Addition of moringa oleifera to our diet provides many benefits such as:

Protecting and nourishing skin and hair, Protecting the liver, Treating edema,Preventing and treating cancer, Making bones healthier, Treating mood disorders, Treating diabetes, Helping wounds to heal, Reducing high blood pressure. Anaemia is a decrease in the total amount of RBC's or haemoglobin in theBlood.Anaemia comes on slowly, the symptoms are often vague and may include feeling tired, weakness, shortness of breath and poor ability to exercise when anaemia comes on quickly symptoms may include confusion, feeling like one is going to pass out ,loss of consciousness and increase thirst. Anaemia can be caused by the three main mechanisms such as Blood loss, decreased RBCpopulation and increased RBC breakdown. Causes of blood loss include trauma and gastro intestinal bleeding causes of decreased production, iron deficiency vitamin B12 deficiency, thalassemia and number of neoplasm of the bone marrow.

Anaemia can also be classified based on the size of the red blood cells and Amount of haemoglobin in each cell. If the cells are small it is called microcystic Anaemia. The diagnosis of anaemia in men is based on haemoglobin of less than 130-140g/l. In women, it is less than 120-130g/l.

Iron: Iron is a mineral and its main purpose is to carry oxygen in the haemoglobin to The red blood cells throughout the blood. So, cells can produce energy, iron also Helps removes carbon dioxide. When the body's iron stores become so low that Not enough normal RBC's can be made to carry oxygen efficiently, a condition Known as iron deficiency anaemia develops, when levels of iron are low fatigue, Pale skin and finger nails, dizziness, headache and glossitis [inflame tongue].

Materials and Methods: Materials include only moringa leaves which are used for several purposes such as treating edema through its anti-inflammatory properties and also provides adequate nutrition for anaemic people.

Methods: addition Meringa leaves powder in foods to be cooked like cupcakes, dhal, and also moringa rice to be fed to selected anaemic girls in our college for a period of 15 days. And the change in haemoglobin levels is estimated.

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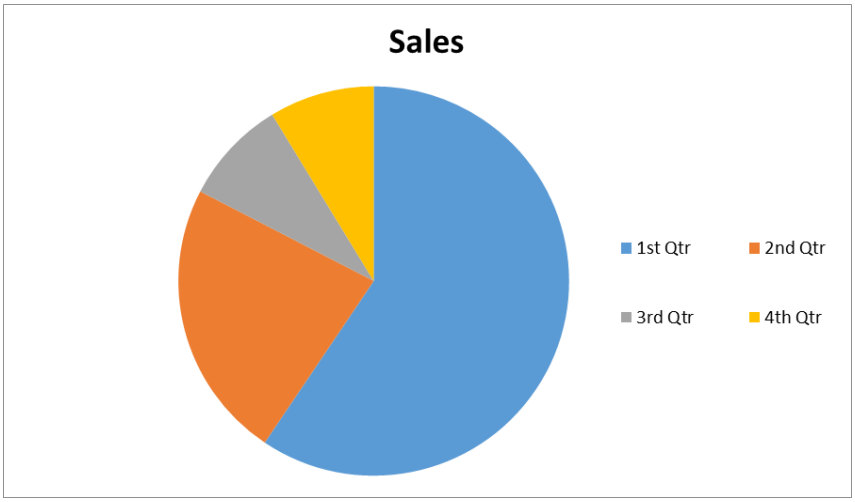
Vitamin- C: Vitamin C is an essential vitamin it can't be produced by the body, it is water Soluble and found in many fruits and vegetables including oranges, strawberries, kiwifruit, bell peppers, broccoli, kale and spinach and drumstick leaves. The recommended daily Intake for vitamin C is 75mg for women and 90mg for men.

Results: In many experiments it was found that moringa leaves prevents anaemia by continuous addition in their diet.



Conclusion: when the haemoglobin levels estimated prior to supplementation they were found to be very low. After certain period of supplementation of moringa oleifera, in the form of cupcakes and vitamin c drinks the blood samples are collected and estimated and there was found an improvement in haemoglobin levels within a period of 15days.

I conclude that supplementation of moringa oleifera along with vitamin C can improve blood levels in anaemic patients. Thus this study strongly says that moringa is an effective medicine that prevent and cures anaemia.

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BIOLOGICAL EVALUTION OF SECONDARY METABOLITES MARINE DERIVED FUNGI

Y. NEERAJA, R.RIPSEE

Abstract: Marine fungi had a prominent role in producing secondary metabolites. Secondary metabolites include antibiotics etc. Antibiotics are the chemical compounds that are produced during the growth phase of the organism. Many years of study have revealed that fungi are excellent sources of novel bioactive secondary metabolites and silver nano particles. Fungi were isolated from marine water sample. A single isolated fungus was isolated by serial dilution method. Microscopic and macroscopic observation was done to identify the organism. Organism was inoculated into medium for production for a period of one week .Later ethyl acetate is added to broth in 1:1 ratio and kept for incubation in shaker. Solvent is separated by separating funnel and solvent is extracted by rotavapour to collect the crude extract. Crude extract is dissolved in DMSO biological activities. Silver Nano particle were synthesized from isolate and its shows antimicrobial activity. The Fungi was identified as Fusarium species and it is able to synthesize secondary with potential antimicrobial activity.

Keywords: DMSO, Fusarium, Ethyl Acetate.

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GEOTEXTILES

DR. KANIKICHERLA RANI

Abstract: Geotextile and their application in road construction, maintenance and erosion control were discussed in detail. A geotextile is any permeable textile material used with foundation, soil, rock, earth, etc. that is an integral part of a constructed project, structure or system. Geotextiles and related products have many applications and currently support many civil engineering applications including roads, airfields, railroads, embankments, retaining Structures, reservoirs, canals, dams, bank protection, coastal engineering and construction site silt fences or geotube. Usually geotextiles are placed at the tension surface to strengthen the soil. Geotextiles are also used for sand dune armoring to protect upland coastal property from storm surge, wave action and flooding.

Keywords: Geotextiles, Erosion, Construction, Soil.

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