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Dr Maggie Qin

“Shanghai Academic Network (SAN)” serves as a platform that aims to help the scholarly community across nations to explore the critical role of multidisciplinary innovations for sustainability and growth of human societies. This conference provides opportunity to the academicians, practitioners, scientists, and scholars from across various disciplines to discuss avenues for interdisciplinary innovations and identify effective ways to address the challenges faced by our societies globally. The research ideas and studies that we received for this conference are very promising, unique, and impactful. I believe these studies have the potential to address key challenges in various sub-domains of social sciences and applied sciences.

I am really thankful to our honorable scientific and review committee for spending much of their time in reviewing the papers for this event. I am also thankful to all the participants for being here with us to create an environment of knowledge sharing and learning. We the scholars of this world belong to the elite educated class of this society and we owe a lot to return back to this society. Let’s break all the discriminating barriers and get free from all minor affiliations. Let’s contribute even a little or single step for betterment of society and welfare of humanity to bring prosperity, peace and harmony in this world. Stay blessed.

Thank you.

Dr Maggie Qin
Conference Chair
SAN- Secretariat, 2019
SAN-19

Demystifying the relationship between ethnic identities of Indian Muslims and their level of religious tolerance -a case study conducted at West Bengal, India

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Abstract

India, the land that witnessed a myriad of religious and cultural experiences, graciously conserving both secularism and freedom of speech in its constitution, has been having a curious debate in recent times - whether the world's one of the leading democracy has become an intolerant nation. The nation has witnessed the synthesis of several rich cultures and has been predisposed by a history that is several millennia old. Inspite of the frantic effort by the various political activists and social bodies to imbibe the amicable spirit of symbiotic and harmonious existence among the multi ethno-religious groups in India, the altruistic effort eventually resulted in disenchantment far from the idealism expected. The obvious reason for such disquieting state of affair is often attributed to the historically reflecting Hindu nationalist position of the present government but an unraveling attempt to reflect deep into consciousness of the largest minority group obviates such claim. The indigenous cultural tradition and passionate religious beliefs of Indian Muslims of different ethnicities underwent a great transformation after its social intercourse with the prevailing social norms of the ethnic majorities. Surprisingly the level of resentment of the Indian Muslims towards the majority Hindus has manifested stark discrepancies among various ethnic groups. Religious extremism and fundamentalism have breed counter-fanaticism and counter-fundamentalism ruining the age old tradition of peaceful coexistence and reciprocal reverences. The research paper makes a meek attempt to ascertain the obscure reasons for such differences in the level of resentment of Indian Muslims belonging to two ethnic groups. This case study was conducted by collecting data regarding religious tolerance using the questionnaire developed by Broer et.al(2017) from two hundred and fifty Muslim students hailing from West Bengal, a state in India and the test results can be extrapolated with minor changes within the entire territory of India.

Keywords— cultural tradition, ethno-religious groups, fundamentalism, intolerant nation, secularism

Introduction

India has witnessed a myriad of social and cultural inspirations since the dawn of civilization. The nation has witnessed the synthesis of several rich cultures and has been predisposed by a history that is several millennia old. Culture is a cluster of mannerisms and the way different social groups communicate with each other. Over the years, India has changed a lot in terms of living standard and lifestyle, but even then the value and traditions are still able to maintain its original integrity and remain unchanged. The fusion of nationalities, cultures and ethnicities was indeed possible because of the desirability of assimilation within the single identity to be called as "Indian". On account of such assorted influences, the Indian subcontinent in a nut-shell emerged to be a cradle of human civilization. Immigration, invasion, modernization and colonial rule begot with them streams of alien influences, which were partially assimilated into the primordial Indian worldviews; the remaining ones coexisted within the overarching Indian worldviews. Indian civilization has succeeded in organically assimilating incoming influences, blunting their wills for imperialistic supremacy and deep entrenching its strong roots and culture.

Islam in India

Genealogy of Indian Muslims

According to the International Institute for Population Sciences, Ministry of Health and Family Welfare, Government of India, 2018, the population of India in 2018 was nearly 133.96 crores, and out of this huge population a significant 14.2% of the people follow the Islamic faith. Islam has contributed greatly to the Indian culture and its people. There are indeed scores of fascinating theories to substantiate how India became to be such a largely Muslim land. Politically, some Hindu radical groups of India most unfortunately represent the Muslims as an extraterrestrial populace but in spite of that the country witnesses a faster growth rate of Muslim population, which is much higher than the national average growth rate. Because pre-Islamic India was...
Role of "Bhakti Marg" and "Sufism" in creating religious syncretism

The rise of fundamentalism in modern times has annihilated the deep entrenched syncretism in Indian culture. Indian civilization has been insightfully impacted by two fundamental beliefs: The influence of Indo-Aryan cultural stream which was endowed with Vedic philosophies and the Indo-Muslim aspect of culture which was entwined with "Bhakti Marg" and "Islamic Sufism" and accorded the orthogenetic and heterogenetic elements of the traditions of both the religions. (Khan.R,1987); Naturally it can be apprehended that the synthesis of the composite culture in India stemmed out in an atmosphere of reconciliation, rather than repudiation, coexistence rather than mutual obliterating of the politically assertive Islamic strands. Khan thus vehemently negates the historical perspective that the medieval period in India was conspicuous with the raging vendetta between the Hindus and Muslims. Khan also aptly points out that the term "Hindu", surprisingly doesn’t appear in ancient Indian texts at all until it transpired in a Tantric text in 8th Century A.D. The intrinsic anthropomorphism of Hindu religion benefited in the syncretism of some of the Muslim saints. The cult of saints has been one of the religious steps which have promoted Hindu-Muslim unification in India. The proliferation and intensification of the Sufism has been remarkably affected the mechanisms of establishing the Hindu-Muslim harmony in India.

Many scholars advocated that the "Bhakti movement" in India is largely liable to lessen the unwanted religious orthodoxy and brace up the eclectic faiths among the Hindu and Muslims. The advent of Bhakti Movement and Sufism has trounced the entire scenario of religious feuds and disagreements and blurred all the obvious differences in construing the philosophical doctrines which is evident till very recently when a Sadguru or Pir have followers of both the religions and they never insisted their followers to give up their respective religions (Lokhandwala, 1987).

Uniqueness of Indian Muslims

Practices of Muslims in India are notably different from other counties. Muslim practice differs here from other countries of Middle East, North Africa and Central Asia. Majority of the Indian Muslims belong to Sunni Hanafi School of thoughts. But there are other schools too. Zakir Naik is a notable Salafi scholar and widely celebrated in India. Nizari Ismailis and Dawoodi Bohra groups of Shia Muslims are very prominent in India. Peer or sages are very powerful in India. Their graves are hugely venerated by Muslims and even among non-Muslims too. During Eid-al-Adha, Muslims surreptitiously slaughter animals hiding in most places, as cow is Goddess-mother to Hindus who are dominant majority in India. The preponderance of Mughal tradition often carries hints on majority of the Muslim traditions in India which resulted in a cultural mélange which is discretely different from the other parts of the world (Sarafan.G,2011). The Mughal Empire was a time period of peaceful religious and cultural prosperity between the Hindus and Muslims of India, conceiving the syncretic ideals and resulting in Islamic-Hindu cross cultural pollination. This “mixed culture” exposé might not be tune with Islamic laws as laid down by the strict religious traditions.

Background of the Study

Triggers of recent religious violence

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But this situation has changed in recent times and India is now considered as one of the most religiously intolerant country of the world. India historically touts itself as a secular state where all religions are recognized and can peacefully co-exist. Well, at least in theory, it is. Unfortunately, the reality is much different (Bhattacharya, A, 2017).

An April 11 Pew Research Center analysis of 198 countries ranked India as fourth worst in the world for religious intolerance. In the country of 1.3 billion, the incidence of hostility related to religion trailed only Syria, Nigeria and Iraq, all places where sectarian violence is widespread.

Muslims of India have developed a staunch feeling that they have become insecure than ever before which has made them vulnerable. Recent cases of failed justice for crimes perpetrated against them have disheartened the Muslim community. According to an newspaper article by Aljazeera published on May 2018 also points out that even to outside observers, it is increasingly clear that Muslims are being detested and isolated from the larger Hindu majority and that state institutions are failing them in India. The brawl between freedom of expression and religious intolerance is passionately exhibited in Indian society where the State, through censoring of books, movies and other forms of crucial expression, victimizes writers, film directors, and academics in order to mollify Hindu religious-nationalist and Muslim fundamentalist group (Singh, A, 2018). Indian Penal Code provisions 298 and 295A have resulted in the harassment of many writers, journalists and scholars from the academia. In addition, exploiting violence and fatwa is also being used to suppress freedom of expression by Muslims and Hindu fundamentalist groups. The Indian national polity is nonetheless in the process of creating a feasible and equitable balance between regional identities and the national identity - the former emphasizing diversity over unity, the latter unity over diversity. This is indeed a crucial aspect of that endless process called nation-building.

India's present Prime Minister's avalanche victory in 2014 was borne on his promises to set free India's economic potential and build a brilliant future while he played down the Hindu nationalist roots of his Bharatiya Janata Party. But under the Prime Minister's leadership, the country experienced sluggish economic growth rates, jobs have not materialized, and what has actually been unleashed is virulent religious fanaticism that threatens the foundation of the secular nation envisioned by its founders.

In India, Muslims are the victims of physical, psychological and financial aggression more prominently since last five years. In majority of the incidences counted, physical violence is propagated methodically by Hindu mobs. However, the connection of state agencies in supporting such violent behavior is against the rights of Muslim citizens in Indian state. Academic evidence hints that political parties, volunteer organizations and state agencies instigates both physical and psychological violence against Muslims in the name of Hindu nationalism (Hussain, S et.al, 2018). This victimization of Muslims is mounting on their social marginalization and vulnerability in India.

Cow slaughter and "Love Jihad" - the vendetta continues

Since 2014, which witnessed significant change in India's political scenario, there has been a disquieting rise in mob attacks against people accused of eating beef or abusing cows, an animal held sacred to Hindus. Most of those killed have been Muslims. Though the Government spoke out against such horrendous acts of killings, these acts took place not long after the government banned the sale of cows for slaughter, a move suspended by India’s Supreme Court. The ban, enforcing cultural stigma, would have fallen hardest on Muslims traditionally engaged in the meat and leather industry. As a society, India in recent times must admit that religious extremism and hatred are deeply entrenched in its sociocultural body politic. (Pandya, A, 2018). The 2015 "Dadri mob lynching" became infamous in which a mob of villagers attacked the home of a Muslim man Mohammed Akhlaq, with sticks and bricks, who they iniquitously suspected of stealing and slaughtering a cow calf. Later an Indian court found prima facie evidence of meat that may be either mutton or beef, and ordered registration of a first information report against the slain Mohammed Akhlaq. The government's inquiry winded up confirming that he was not storing beef for consumption. On December 6, 2017, an unemployed Hindu fanatic Shambhu Lal Regar hailing from a quaint sleepy Indian hamlet of Rajsamand came to mass attention when he posted a video of the appalling murder of Mohammed Afzarul to take vengeance of "Love Jihad" (a term used by Hindu nationalists to express a practice in which Muslim men pretend love to draw Hindu women away from their faith). The gruesome video clipping left the liberals flabbergasted in fear. Washington-based Ahmad Mustikhan, a Baloch activist, championing for the cause of Hinduism in Baluchistan wrote: "My head is bowed in shame as a defender of Hinduism as a humanist faith and an Indophile. I am speechless and very angry."

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Whenever India escalates higher on the global barbarity index following such incidents, the concluding effect is almost always a polarization of Hindu versus Muslim. Even the insincerity of reproving such dreadful incidents does not remain an honest exercise. Right-wing political parties and cultural groups start complaining of liberal hypocrisy, of selective outrage. It is challenging to initiate a crusade against religious nationalism particularly Hindutva in an atmosphere of Islamophobia with the state providing shields to heads and activists of one particular religion only. This is also reflected in the policies of the state with regard to visas, refugee policy from religious ceremonies on state functions, and inkling of religious screening in employment (Human Right Council, 2017).

Literature Review

Relationship between religion and ethnicity are few and far between as such linkages are often understood as either religion reinforcing ethnicity or vice versa (Barry. D.M,2012). Most literature on the relationship between religion and ethnicity approach the interaction and acknowledges as religion preserving ethnicity. According to Smith, religious community could either "divide an ethno-linguistic population "or alternately "erode ethnic differences." (Whichever case it may be, religion is always used as a major source for preserving ethnicity. Thus, religion serves ethnicity as a resource that can either maintain or divide a group of people based on distinguishing symbols, practices, and beliefs. This relationship between Islamic religion and ethnicity is well documented based on Horowitz's work insinuating that if an ethnic group's dominant religion is Islam, then their Muslim identity is superlative while all other sources of collective identity i.e., ethnicity, nationality, etc are secondary, if not irrelevant. But it is keenly observed that there are some differences observed at the perceptual level of what means to be religiously tolerant by the Muslims belonging to different ethnicities. The free dictionary quotes that "Historically, religious tolerance always considered as paramount aspect of tolerance, since religions tend to be intolerant of each other, and religious intolerance has led to innumerable wars, battles and mass massacre”. The philosophers and writers of the enlightenment especially Voltaire and Lessing, propagated religious tolerance, and their influence is convincingly felt in Western society. Nevertheless the lack of religious tolerance causes problems in many regions of the world today and definitely India is not an exception. Tolerance in general sense can be explained by the components objection, acceptance, and rejection (Forst.R, 2010, p.2). For a practice, belief or religion to be a candidate for toleration it must be objected to or disliked in the first place. Despite the objection there can be reasons for it to be accepted. The fundamental dependence of human self-knowledge on the knowledge of a god, God or ultimate source has its inner ground in ‘the essence of his religion as the central sphere of created nature’ (Dooyeweerd 1969:1, 55) This fundamental thinking of the idea of God and staunch belief in the divine virtues of impeccability, immutability, omnipresence, omnipotence, immanence and many others fortify the belief of oneness of his divine existence and ascertains the strength of association with one’s own religion. Another discourse of related studies avows spiritual struggles involve difficulties that a person may encounter with his or her faith, which may include having a troubled relationship with God or encountering difficulties with other religions (Krause,N et al, 2017). Therefore it is well affirmed that different ethnic groups tolerance towards other religion is reliant on the ethnic identity of an individual.

Methodology

Sample Size and Sampling Plan:

This case takes into consideration Muslims of two ethnic groups in the state of West Bengal in India and tries to find out the plausible causes of the differences in the process of understanding religiosity and how they are overtly tolerant towards people of other religious denomination. This case takes into account two hundred and fifty Muslim students belonging to two ethnic
communities -Bengalis (native of the state of West Bengal) and Biharis (native of the Indian state of Bihar, but presently studying at West Bengal), and tries to demystify how the conception of religiosity, the intensity of attachment to the basic teachings Islam, the extent of prejudices formed and the tolerance towards other religion varies significantly. The two hundred and fifty students included in this sample are all registered under engineering courses at seven different technical colleges at West Bengal. Judgmental Sampling Technique was followed in this case where the choices of sample items were exclusively dependent on personal acquaintances. Random Sampling was not followed for this pilot study because the direct question of religious tolerance has a chance of getting irked during the lunch breaks. Hence for the purpose of the Pilot Study personal acquaintances with the students before hand was ensured. The Appendix III of the questionnaire developed by Broer et al(2017) regarding religious tolerance was administered among the students to find out what was the

Data Analysis:

Chi Square statistics is used for testing relationships between categorical variables. Here in this case the first categorical variable is the ethnicity of the Muslim students, and the second one is level of attachment towards their own religion and the relationship with the factors indicating their level of religious tolerance towards other religion. The factors which were identified from the Appendix III of the questionnaire developed by Broer et al measuring religious tolerance are i) Value attached to own religion ii)Accommodative nature towards other religion and iii) Idea about exclusivity about ones own religion. Three Chi Square Tests were done to find out the relation between the categorical variables in this case.

Results

From the three set of Chi Square Tests Performed it was observed that the Null hypothesis can only be accepted in the last case where as in the first two cases the Alternative Hypothesis was accepted. Hence it can be concluded that there are significant differences in how ethnicity(whether Bengalis/Biharis) of Muslim students affects radical attachment towards religious values and norms as well as level of respect shown towards people of other religious denominations however there are no such significant differences in the level of contentment expressed about the minority protection initiatives taken by the government.

<table>
<thead>
<tr>
<th>Case Processing Summary</th>
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</thead>
<tbody>
<tr>
<td>Cases</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Ethnicity of the students * How radically the follow the religious values/norms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity of the students * How radically the follow the religious values/norms Crosstabulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>How radically the follow the religious values/norms</td>
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</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Ethnicity of the students</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

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Peer-review under responsibility of the Scientific & Review committee of SAN-2019.
### Chi-Square Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
<th>Exact Sig. (2-sided)</th>
<th>Exact Sig. (1-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>4.322</td>
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<td>.038</td>
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<tr>
<td>Continuity Correction^b</td>
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<td>.056</td>
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<tr>
<td>Likelihood Ratio</td>
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<td>.041</td>
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<tr>
<td>Fisher's Exact Test</td>
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<td>.048</td>
<td>.029</td>
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<tr>
<td>Linear-by-Linear Association</td>
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<td>N of Valid Cases</td>
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* a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.68.

b. Computed only for a 2×2 table

### Ethicity of students * Tolerance towards other religions Crosstabulation

<table>
<thead>
<tr>
<th>Ethicity of students</th>
<th>Tolerance towards other religions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tolerant towards other religions</td>
<td>Non tolerant towards other religions</td>
</tr>
<tr>
<td>Bengalis</td>
<td>Count 148</td>
<td>17</td>
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<td></td>
<td>Expected Count 110.2</td>
<td>54.8</td>
</tr>
<tr>
<td></td>
<td>Std. Residual 3.6</td>
<td>-5.1</td>
</tr>
<tr>
<td>Biharis</td>
<td>Count 19</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Expected Count 56.8</td>
<td>28.2</td>
</tr>
<tr>
<td></td>
<td>Std. Residual -5.0</td>
<td>7.1</td>
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<tr>
<td>Total</td>
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<tr>
<td></td>
<td>Expected Count 167.0</td>
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### Chi-Square Tests

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<tr>
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<th>Asymp. Sig. (2-sided)</th>
<th>Exact Sig. (2-sided)</th>
<th>Exact Sig. (1-sided)</th>
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</thead>
<tbody>
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<td>Pearson Chi-Square</td>
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<tr>
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<td>.000</td>
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<tr>
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<td>.000</td>
<td>.000</td>
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<tr>
<td>Linear-by-Linear Association</td>
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</tbody>
</table>

* a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 28.22.
### Chi-Square Tests

<table>
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<th></th>
<th>Value</th>
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<th>Exact Sig. (2-sided)</th>
<th>Exact Sig. (1-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
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<td>1</td>
<td>.661</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuity Correction</td>
<td>.078</td>
<td>1</td>
<td>.779</td>
<td></td>
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<tr>
<td>Likelihood Ratio</td>
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<td>1</td>
<td>.659</td>
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<tr>
<td>Fisher's Exact Test</td>
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<td></td>
<td>.751</td>
<td>.393</td>
<td></td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>.192</td>
<td>1</td>
<td>.661</td>
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### Ethnicity of the students * Whether happy or not with the minority protection initiatives by the Govt.

<table>
<thead>
<tr>
<th>Ethnicity of the students</th>
<th>Whether happy or not with the minority protection initiatives taken by Govt.</th>
<th>Not happy with the minority protection initiatives by the Govt.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Happy with the minority protection initiatives taken by Govt.</td>
<td>Not happy with the minority protection initiatives by the Govt.</td>
<td></td>
</tr>
<tr>
<td>Bengalis</td>
<td>Count</td>
<td>39</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>Expected Count</td>
<td>37.6</td>
<td>127.4</td>
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<tr>
<td></td>
<td>Std. Residual</td>
<td>.2</td>
<td>-.1</td>
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<tr>
<td>Biharis</td>
<td>Count</td>
<td>18</td>
<td>67</td>
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<tr>
<td></td>
<td>Expected Count</td>
<td>19.4</td>
<td>65.6</td>
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<td></td>
<td>Std. Residual</td>
<td>-.3</td>
<td>.2</td>
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<td>Total</td>
<td>Count</td>
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<td>Expected Count</td>
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<td>193.0</td>
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b. Computed only for a 2x2 table

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Peer-review under responsibility of the Scientific & Review committee of SAN-2019.
Conclusion

This empirical research is attempted to arrive at conclusive evidence in support of the fact that how the ethnic origin of the Indian Muslim students significantly affect their level of religious tolerance towards students and other community members professing different religion (mainly Hinduism) and the respect or insolence shown towards people whose religious beliefs are different from them. This research also makes and attempt to elucidate whether the students feel free to respectfully socialize with people who hold beliefs different from them. The intriguing results from this research reveals that it's not the religious background, rather it is the ethnicity of the person that decides whether to instill religious fundamentalism or to educate them to become religiously or spiritually unprejudiced individuals as worthy members of their communities. This forms part of their spiritual and moral duty towards the society. The psychological acculturation of minority adolescents refers to the process of adaptation to the multicultural social environment in which they grow up (Phalet et.al, 2018). This adaptive practice is part of general developmental progression, which gives rise to multiple pathways of identity development with adaptive value in specific sociocultural contexts. The myriad of uncongenial experiences which the Bihari communities had after the partition of India and the significant changes in the social context which they encountered; the unanticipated bloodshed, the Bihari exodus from India to Bangladesh where they got an resentful tag as ‘stranded Pakistanis’ and subsequently with great antipathy coming back to India to stay along with Hindu majorities had compelled them to think about the world in new ways and conform to new ways of being and doing. However one striking observation from the research approves that majority of students irrespective of their ethnicity were worried about the increasing trend of Hindu fundamentalism. They expressed their disquiet about political linkages and strong ideological influences with various fundamental Hindu nationalists groups and their interference on Islamic affairs as well as the minority welfare initiatives taken by the Government. The discrepant life experiences and the spiritual struggles, the two ethno religious groups faced in the greater Indian society is however more indicative of their religious tolerance than the teachings of the religion itself. As India has a vibrant youth and it goes without saying that these youth are the future responsible citizens of this great nation, it is high time that India needs to exploit the strengths of her traditional syncretic culture, embrace a systematic tactic to promote communal accord among all ethnic groups and rein in extremist radical groups from both the Hindu and Muslim communities.

References


*N of Valid Cases 250
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.38.
b. Computed only for a 2x2 table


Jagodzinski W .(2009). The Impact of Religion on Values and Behavior, Kwansei Gakuin University Repository, pp 19-31


There are many things we can learn from actions of the past. I teach philosophy at a technical school, but I see a need for less technical knowledge to be gained, practiced and used in the event of an emergency. A Japanese rich farmer, Hamaguchi Goryo, saved the lives of villagers when a huge Tsunami (an enormous tidal wave) devastatingly hit Ansei-Nankai area in western Japan in 1854. Goryou set fire to his abundant rice harvest intentionally to urge people toward a hilltop showing an evacuation route by the beacon fire. Goryou’s feat impressed a famous novelist, Lafcadio Hearn, who wrote a novel named “A living God” and published it in 1897. The story was translated into Japanese later and was used as a government-designated disaster prevention textbook for Japanese youngsters from 1937 to 1947. The aim of my research is to clarify two main points that should be remembered. First, I will introduce Goryou’s true acts and deeds: his ultimate devotion to the village. Second, I will show you some hints to consider what you can do to protect yourselves when an earthquake happens next. The most significant lesson as disaster prevention from our history is, in a word, that “in prosperity prepare for adversity.”

**Introduction**

Imagine you and your friends are swimming in the ocean. You may be playing with a beach ball or on surf boards. Where is your cell phone, or your smart watch? Maybe it is in your beach bag. You never realize when an earthquake happens. Later on, you see the sea water begin to recede quickly. You can catch fish with your hands and enjoy the unusual scenery of drying seabed. Then you suddenly notice a tremendous black wall, like a living thing, is approaching you. For example, records in 1896 show that a tsunami of 38.2 meters hit the Tohoku region after the Meiji-Sanriku earthquake. It travels at the speed of a jet aircraft and the five-story high tsunami reaches 20 kilometers inland. A survivor testified the fact that the massive force of tsunami washed away 24,000-ton freighter in 2011. This is what really happened recently in many coastal villages. If you lose all your lifeline immediately after an earthquake (or tsunamiis), you are unable to use our smartphones or watch TV. Aftershocks often come one after another throughout the night, preventing you from getting any sleep and rest. If you are not alone, being with your family, with your friends and neighbors, you may feel better. In this presentation, we contemplate some ways to survive tsunami disasters.

“Inamura-no-Hi (“The Bonfire of Rice Shelves”)

Frequently, an earthquake may be an advance notice of coming of a tsunami. Today many people know that the sea’s unusual withdrawal following an earthquake often signals a tsunami’s arrival. If you notice the coastal water begins to withdraw leaving the sea floor exposed, you should run to higher places at full speed immediately. Almost 165 years ago, this phenomenon, a tsunami warning signal, captured a Japanese landowner’s eyes in Wakayama Prefecture. On November 5th, 1854, Goryou Hamaguchi noticed the lowering of the tide and a rapid decrease in the well water after feeling an earthquake. According to folklore, Goryou tried to evacuate his villagers by kindling a huge fire to his sheaves of rice, which were piled up on top of a hill. Goryou ignited his whole-year-harvest in order to make fire signals of tsunami warning. Lots of villagers ran high up to the hill in a big hurry, and they were stunned at the sight of tsunami swallowing their village. This is the summary of “Inamura-no-hi” (meaning “the bonfire of rice shelves”), with which Lafcadio Hearn was deeply impressed. Hearn finally wrote a novel (“A Living God”) according to the folklore.

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**Keywords**— Tsunami, disaster, Fire of Inamura, Warning system, Henry D. Thoreau
The Sequel of the True Story

Telling you the truth, the story was a little dramatized (or, allegedly somehow misunderstood) by Hearn. In real life, Goryou was caught by the first wave of tsunami, and luckily survived to reach out for height. At night, he started bonfires

using bundles of straw (which were waste and not edible) on top of a hill and people gathered about the fire. After the Ansei-Nankai Disaster, Goryou played a more important role as a leader of reconstruction of the damaged village. He hired the tsunami-victims to make a huge wall, 5 meters high & 600 meters long, to protect the village from the next tsunami. Actually, 92 years later, another tsunami attacked the village, and Goryou’s defensive wall saved most of its residential area. Goryou invested his private capital in the enterprise to strengthen the villagers’ love and solidarity to their hometown. In general, survivors must endure hard lives as a result of a disaster, but they should try to share their daily necessities and help each other. The public utility construction needed more than 4 years to be completed, and many villagers could live with the works. Goryou planted Japanese lacquer trees near the great wall for the workers to earn extra money from them. (The trees can produce some special glaze to protect wooden bowls.) According to J. Hamilton, “by building sturdy sea walls and planting vegetation, such as mangrove trees, in shallow waters near shore, coastal communities can help minimize the damage caused by tsunamis,” just like this village.

Reusable Past (Lessons of Indonesian Islands)

In Indonesia, a great tsunami killed more than 220 thousand people in 2004. It was one of the deadliest disasters ever happened in the world. But there is a small island called Simeulue in the Aceh province that lost only a few out of 78,000 islanders. Because the islanders passed down a significant lesson of the past tsunami they experienced a century ago (1907) from generation to generation. The lesson is that “if there happens an earthquake, and the sea water is receding from the shore, escape to the mountains.” The islanders made it a nursery song or a poem called “Nandon Summun” to memorize easily. After the earthquake, they ran to 30 meter high hill and most of them were able to survive. Even today, the children of Simuulue island often sing and dance according to this instructive song in their schools. This episode teaches us the effectiveness of education of disaster readiness program. In Malaysia, some lifeguards on beaches in Penang used a simple red flag warning system, and they succeeded in reducing the number of dead people.

A Hint in Walden (1854)

In this section, I refer to a very famous American naturalist, Henry D. Thoreau. He was a well-known nature lover and a famous environmentalist in the 19th century. But one day in summer, he burnt a forest mistakenly by his campfire. The fire spread quickly and he could nothing but let it go. The incident became his long time trauma. Later, Thoreau wrote in his famous book Walden, which was published in 1854, the same year of Ansei-Nankai Earthquake, that if he pulled the bell rope of a church, all men and women would get together for the warning. While the fire cannot be seen well in the daylight, the bell sounds can be heard by “a man on his farm in the outskirts of his town, Concord.” He actually rang the church bell by himself to gather audience for some special occasions. The power of sounds can be one of the reliable measures of warning against crises.

Conclusion

In this paper, we have examined the effectiveness of primitive warning methods. Let us summarize them into 4 points. (1) Fire, lights, beacons, smoke signals should be prepared on top of the hills for emergency. (2) Evacuation routes should be shown clearly. Shelters serving both as observation towers and signal-sending offices should be provided in each community. Higher buildings and towers should open stairs and rooftops to all refugees in case of emergency. Like tree houses, each community should preserve enough emergency goods, dried food and water on higher, safer points. (3) Evacuation plans should be given to people. Mapping,
singing, and dancing, or chanting a rescue poem proved to be very effective methods for survival education. Old warning, such as emergency red flag should be set for all beaches. (4)All community centers and pubic halls should be equipped with sirens, bells, microphones, and loudspeaker cars to warn people. Even when you were in the beach, you can listen to the loud, noisy sounds. By learning our tragic past, we should put our efforts toward maintaining a cooperative spirit worldwide. (After the 2011 Northeastern Japan Tsunami, lots of volunteers came from other areas and from many countries. S. Kumamoto reported that Ohio University students came from the United States to help Japanese victims.) Let us prepare for the next disaster.

References


SAN-19

Study of Factors Affecting Strength of sealing in the product packing process by Utilizing Central Composite Design
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Abstract

This research is to study the appropriate factors to increase the strength of the sealed packets containing seasoning sauce to experiments. This study began with the introduction of cause and effect diagram to analyze the factors that affect the strength of seals. From the evaluation of several factors involved and found that the 3 factors may affect the strength of seals which are sealing temperature, speed in film feeding, and degree of shut-off valves. Therefore, an experimental design has been conducted by Central Composite Design to analyze the optimal conditions of the packaging, and using Response Surface Methodology to find the best value and it was found that the temperature sealing at 126 0C, film feeding 18 rpm and degree of shut-off valves at 115 degrees, given the maximum strength of the top and bottom seals. After the application of the experimental result, the strength of the sealing on top increased from 34 N to 56 N or 64.71% more, the standard deviation decreased from 3.14 to 2.92, or a decrease of 7.01% and the strength of seals at the bottom increased from the original 34 N to 55 N, or 61.77% more, the standard deviation decreased from 3.21 to 2.98, or decreased 7.17%. The result of improvement has determined to decrease the waste caused by sealing down from 81.5% to 3.68%, causing the waste of the packaging process reduce from 7.84% to 2.47% or down by 5.37% but the quality of seasoning sauce remain the same. This project has achieved the objective of the study.

Keywords— The Strength of Seals, Central Composite Design, Response Surface Methodology.

Introduction

At present, the industries involved in hire to produce products for various employers, especially the sauce seasoning has grown steadily and have more competitive in terms of quality, price and delivery. [9] Concluded that each organization is trying to develop its own strategy in order to enhance the ability and compete with other operators. Waste reduction in the production process is one way to help reduce production costs therefore, to improve, develop study and find the appropriate production factors it will lead to control of production parameters to reduce waste. The company of case studies also suffer from waste in the production process rather than the target especially the forming and packing stages. Due to the sealing of the envelope is not strong enough so that is the cause of leakage. As a result, the sauce that is liquid was flow and comes out. Based on data from January to March 2017 found that all wastes detected in the product packing process were found 7.84%. The highest proportion of Tomato Sauce is 6.61% or a loss worth 84.29% of the total loss value. As Table 1. The purpose of this research is to reduce waste in the product packaging process to 2.5%. Based on relevant research studies found that have been application of experimental design to solve problems in product packaging. Such as [7] has done researched to reduce bubbles in plastic to reduce waste in product packaging process by utilizing Box-Behnken Experimental Design to find the appropriate conditions. The research found that the roller speed of 150 meters per minute, oven temperature 80 degrees Celsius, and plastic tensile 400 Newton make minimal bubbles. [4] has done researched on the reduction of defective products in the package packaging process by utilizing 23 Factorial Design to find the right conditions that make the product the least defective. From the research results can reduce the defective product from 6.84% to 2.84% and [3] has researched the application of experimental designs to improve the quality of product packaging by utilizing 33 Factorial Design. To find the right conditions that produce the least waste, from the improvement result was decrease waste 94.07%. Based on studies in related research that leads to a conceptual framework for the study of the optimal value of factors that affect seam strength of sealing. By applying Central Composite Design and statistical analyze methods. Factors studied include sealing temperature; film feed speed, and Shutoff degrees.
Objectives

To study for find the appropriate factor level to increase the strength of sealing packaging sauce seasoning. In order to reduce waste, the product packing process is reduced to 2.5% by applying design experiments Central Composite Design.

Research Methodology

3.1 Study and problem definition

The company of case studies is a company hired to producing food sauce It consists of 4 main units as follows: (1) Operations Department, responsible for production, transportation and warehousing, maintenance, and marketing. (2) Technical Department, responsible for product development and technical support, Quality assurance and information. (3) Accounting Department, responsible for accounting and finance. (4) Personnel department, responsible for recruitment. Personnel training and compensation. This research was study in the production department of the Operations Department. Which the seasoning sauce has tomatoes are the main ingredient in addition, a mixture of spices, by use a steam sterilization process through a double boiler. Then do the sterile packaged by hot packing with forming machine, packing and automatic sealing. The steps can be summarized as following:

1) Preparation of raw materials, the staff will prepare raw materials and weigh the raw materials to use in mixing with various recipes. For prepare the tomato juice, which is the main ingredient in the production, uses a grinder and a filter machine, for spices to be mashed and chilled at 5-10 °C. 2) Mix and disinfect, start by mixing the ingredients by volume, steps and time according to technical department has set. Then the steam sterilization through two-tier pot controls the steam pressure at 3 bar at temperature 110 degrees Celsius for 80 minutes. Then release the product by the closed pipeline to the tank waiting.

3) Hot packing, to prevent the danger of contamination and the growth of microorganisms in the packing process so that use hot packing. Set the sauce temperature packing to about 90 °C. with the forming and packing machine automatic seal. For film used as NYLON / LLDPE laminated plastic film, the total thickness 80 mm put the sauce in bag while it hot and sealed immediately. The operator will check the seal by observing it, if there is a blemish the leak or crack of the seal have to stops the machine and adjust the setting temperature of sealing, adjusting the press interval, film feed speed and shutoff degrees to solve such problems.

4) Cooling. Packaged products are transported by belt pass through the cold room about 5 degrees Celsius to reduce the product temperature.

5) Perform quality checks randomly, for example, the microbes detect the amount of microorganisms, yeast detection, and sealed the packing, the leak and the blame of the packing etc. From Table 1 Show all waste of products in the product packing process. (January - March 2017) all wastes detected in the product packing process 7.84% the highest proportion of Tomato Sauce products 6.61% or accounted for a loss of 84.29% of the total loss value. Therefore, this research has chosen Tomato Sauce to study because it is the product with the highest loss ratio.

3.2 Analyze and determine solutions to problems

3.2.1 Study of current production conditions, from the study of production conditions of the packaging process, Tomato Sauce it is packed in 100 × 120 per/pack square centimeter packing size 100 grams and seam sealing of 4 side from checking the forming step and packing and sealing, it is found that waste is due to various characteristics such as (A) The package leaks from the top and bottom sealing marks. (B) Sauce stains stick on the package. (C) Case leakage from the left and right sealing. (D) Sealing was burned. (E) Misplaced code. (F) Weight does not meet the standard. (G) The size of the package does not meet the other standards. the characteristics of waste from January to March 2017 it was found that the appearance of the package leakage from the top seal most, subsequently, the package was leakage from sealed below and sauce stains stick on the package respectively. From the above characteristics are analyzed for causes the appearance of leakage of packaging from top and bottom sealing from relevant people include the department responsible for production and product development and technical support and quality assurance. It was concluded that the package leakage due to sealing was not strong enough. So that do the randomly check the strength of the seal of the products that have been passed check with the 100% by random from the product has leakage from the top seal by random from the product has leakage from the top seal
from 100 samples that is a sufficient number of samples 95% confidence level and the fallibility can be acceptable not more than 2.5 Newton, an average has been sealed strength of

34 Newton. Standard deviation 3.14. And random from the product has leakage from the bottom seal from 100 samples an average has been sealed strength of 34 Newton, Standard deviation 3.21 and from testing result the product good of the testing room has a mean of top seam strength of 52 Newton. Standard deviation 3.14. And a mean of bottom seam strength of 52 Newton. Standard deviation 3.11. The researcher tested the statistical hypothesis of testing result the product good found that the average and variation of strength sealing of top and bottom sealing is not different significantly 0.05, So troubleshooting of waste that leakage package from sealing of the top and bottom are the same problem. This study needs to find the conditions that make highest strength of top and bottom sealing and not less than 51.4 Newton. This value is based on the test results the product good the lowest mean was 51.4 Newton at 95% confidence level.

3.2.2 Process capability assessment

This step the researchers was evaluate capability of process to confirm that waste leaked of package from sealed have the variables constant and under statistical control or not. [2] said that the test data abnormality on the control chart from the test method, find out the abnormal data of the automotive industry USA. All data points that plot on the process control chart are in control lines and the data is random from the study found that process data did not show any characteristics. Contradictory to the above assumptions.

3.2.3 Analyze and select factors that cause problems

From the problem of sealed packing is not enough strength is expected to be less than 51.4 Newton. will be analyzed for the cause. By brainstorming of those involved by use cause and effect diagram to determine the cause of the problem. Form diagram showing cause and effect cause of waste from sealed is not sufficiently strong, expected to be less than 51.4 Newton. Summarized as follows:

1) Degrees off the shutoff valve of the machine to leave the sauce down the packing will affect the pressure and relate to packing speed include pressing the machine this may affect the sealing in the current work set to 115-125 degrees.

2) Pressing, adjustment of the pressing of the machine is related to the pressure to turn on the shutoff valve off and sealing speed. If set is tight, it will cause a noise in the current operation set to 28-29 mm.

3) Sealing temperature, because the film used today is a flexible two-layer film and weak at high temperature it will be related to packing speed, in the current work set to 118-122 degrees Celsius.

4) Film Feeding Speed, heat sealing is correlated with the sealing speed, film pulling speed, the speed of the sauce to pack in the current work set to 18-20 round per minute.

5) Sauce temperature, in the actual working conditions of the product packaging process, the packaging temperature is in the range of 80-90 degrees Celsius in order to safety to packaging. Researchers and those involved have brainstormed and consider together and prioritize the cause of the waste. [8] Do conclusions on the use of analytical techniques for waste and the impact of the process (Process FMEA). The result of the analysis is that the number of risk level (RPN) sort by most to least such as the seal temperature is 680, the film feed speed is 510, turn off the shutoff valve is 440, the press range is 80, and the sauce temperature is 70 respectively. Considering the importance of the factors affecting the problem found that there are 3 high scoring factors The total score of all three factors is 90% of the total score, so that was set to the main factor to study such as sealing temperature, film feed speed, and shutoff valve degrees. The control variables in the experiment such as the press still control at 28-29 mm. the sauce temperature remains the same at 80-90 degrees Celsius, because the researcher and those concerned think it haven’t influence on waste. Therefore, the experiment was set up and controlled as described above.

3.3 Experiments to determine the influence of factors

3.3.1 Experimental design Central Composite Design (CCD)

In this research use the central design principles, [5] have concluded that as part of the Response Surface Methodology, used in experimental design for quadratic model. and lead to the interpretation of the desired response surface and use and the number of Runs is not much, as an additional test of the 2k Factorial Experiment. Therefore, the three main factors
affecting the response variables to analyze the design of the experiment to find the nearest appropriate point to the best production. The experiments were randomly conducted using a computer program to determine the experimental sequence, by collecting experiments 2 replication in order to get the result to have less variance. Which level of factor shows the results on table 2. As shown in Table 3, the Analysis of Variance for Top and Bottom Seal Strength. Table 4, and 6, Estimated Regression Coefficients for Top and Bottom Seal Strength using data in uncoded units, Table 5. and 7, respectively.

Table 1:
Factor level of Central Composite Design

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Table 3:
Experiment Result

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Table 4: Analysis of Variance for Top Seal strength

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<td>1</td>
<td>443.63</td>
<td>443.63</td>
<td>443.63</td>
<td>30.46</td>
<td>0.000</td>
</tr>
<tr>
<td>Interaction</td>
<td>3</td>
<td>70.16</td>
<td>70.16</td>
<td>23.39</td>
<td>1.61</td>
<td>0.000</td>
</tr>
<tr>
<td>Interaction A * B</td>
<td>1</td>
<td>36.91</td>
<td>36.91</td>
<td>36.91</td>
<td>2.53</td>
<td>0.209</td>
</tr>
<tr>
<td>Interaction A * C</td>
<td>1</td>
<td>31.08</td>
<td>31.08</td>
<td>31.08</td>
<td>2.13</td>
<td>0.122</td>
</tr>
<tr>
<td>Interaction B * C</td>
<td>1</td>
<td>2.18</td>
<td>2.18</td>
<td>2.18</td>
<td>0.15</td>
<td>0.702</td>
</tr>
<tr>
<td>Residual Error</td>
<td>30</td>
<td>436.94</td>
<td>436.94</td>
<td>14.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack-of-Fit</td>
<td>6</td>
<td>157.37</td>
<td>157.37</td>
<td>26.23</td>
<td>2.25</td>
<td>0.073</td>
</tr>
<tr>
<td>Pure Error</td>
<td>24</td>
<td>279.57</td>
<td>279.57</td>
<td>11.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>3041.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Estimated Regression Coefficients for Top Seal strength using data in coded units

<table>
<thead>
<tr>
<th>Term</th>
<th>Coef</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>54.1595</td>
<td>0.000</td>
</tr>
<tr>
<td>A</td>
<td>5.8346</td>
<td>0.000</td>
</tr>
</tbody>
</table>

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Table 6:
Analysis of Variance for Bottom Seal strength

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Seq SS</th>
<th>Adj SS</th>
<th>Adj MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>9</td>
<td>2428.35</td>
<td>2428.35</td>
<td>269.816</td>
<td>25.12</td>
<td>0.000</td>
</tr>
<tr>
<td>Linear</td>
<td>3</td>
<td>1299.09</td>
<td>1312.84</td>
<td>437.612</td>
<td>40.74</td>
<td>0.000</td>
</tr>
<tr>
<td>A</td>
<td>1</td>
<td>959.67</td>
<td>959.67</td>
<td>959.669</td>
<td>89.35</td>
<td>0.000</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>122.52</td>
<td>122.52</td>
<td>122.518</td>
<td>11.41</td>
<td>0.002</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>216.90</td>
<td>230.65</td>
<td>230.650</td>
<td>21.47</td>
<td>0.000</td>
</tr>
<tr>
<td>Square</td>
<td>3</td>
<td>1058.59</td>
<td>1058.59</td>
<td>352.862</td>
<td>32.85</td>
<td>0.000</td>
</tr>
<tr>
<td>A * A</td>
<td>1</td>
<td>664.15</td>
<td>758.40</td>
<td>758.400</td>
<td>70.61</td>
<td>0.000</td>
</tr>
<tr>
<td>B * B</td>
<td>1</td>
<td>23.33</td>
<td>40.36</td>
<td>40.356</td>
<td>3.76</td>
<td>0.062</td>
</tr>
<tr>
<td>C * C</td>
<td>1</td>
<td>371.11</td>
<td>371.11</td>
<td>371.106</td>
<td>34.55</td>
<td>0.000</td>
</tr>
<tr>
<td>Interaction</td>
<td>3</td>
<td>70.67</td>
<td>70.67</td>
<td>23.557</td>
<td>2.19</td>
<td>0.109</td>
</tr>
<tr>
<td>A * B</td>
<td>1</td>
<td>37.21</td>
<td>37.21</td>
<td>37.210</td>
<td>3.46</td>
<td>0.073</td>
</tr>
<tr>
<td>A * C</td>
<td>1</td>
<td>31.36</td>
<td>31.36</td>
<td>31.360</td>
<td>2.92</td>
<td>0.098</td>
</tr>
<tr>
<td>B * C</td>
<td>1</td>
<td>2.10</td>
<td>2.10</td>
<td>2.102</td>
<td>0.20</td>
<td>0.661</td>
</tr>
<tr>
<td>Residual Error</td>
<td>30</td>
<td>322.21</td>
<td>322.21</td>
<td>10.740</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack-of-Fit</td>
<td>6</td>
<td>84.39</td>
<td>84.39</td>
<td>14.066</td>
<td>1.42</td>
<td>0.248</td>
</tr>
<tr>
<td>Pure Error</td>
<td>24</td>
<td>237.82</td>
<td>237.82</td>
<td>9.909</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>2750.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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3.3.2 Experimental results Central Composite Design

From Table 4. and 6, the results of the experimental analysis Central Composite Design found that the factors A, B, C and A * A, C * C, p-value less than 0.05 it can be concluded that these factors affect the Top and Bottom Seal Strength, and [6] it can be concluded that the P-value of Lack-of-Fit was 0.073 and 0.248 higher than the significance level 0.05. This means that the regression model for Seal Strength is significantly appropriate by R-Sq (adj) = 81.32% and 84.77%, respectively. So that the regression model was constructed. And check the hypothesis by Graph Residual Plots found that there was no conflict with the statistical hypothesis. Tables 5. and 7 show relationships that affect the Top and Bottom Seal Strength and the model of the regression equation can be written as a coded unit as the following the equations are (1) and (2) respectively.

\[
Y_{(\text{max})} = 54.1595 + 5.8346A - 1.9439B - 2.9353C - 5.8293A^2 - 4.0346C^2
\]  
(1)

\[
Y_{(\text{max})} = 52.2881 + 5.9496A - 2.1258B - 2.9475C - 5.1942A^2 - 3.7755C^2
\]  
(2)

When \( Y_{(\text{max})} = \) Seal Strength
A = Seal Temperature
B = Speed
C = Degree valve

3.3.3. Determining the appropriate factors from the experiment

Equations (1) and (2) can find the response to the Top and Bottom Seal Strength was occurred by experiment this is analyzed with the Response Optimizer function the optimum values for all three factors are shown in Figure 1.

---

Table 7:
Estimated Regression Coefficients for Bottom Seal strength using data in coded units

<table>
<thead>
<tr>
<th>Term</th>
<th>Coef</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>52.2881</td>
<td>0.000</td>
</tr>
<tr>
<td>A</td>
<td>5.9496</td>
<td>0.000</td>
</tr>
<tr>
<td>B</td>
<td>-2.1258</td>
<td>0.002</td>
</tr>
<tr>
<td>C</td>
<td>-2.9475</td>
<td>0.000</td>
</tr>
<tr>
<td>A * A</td>
<td>-5.1942</td>
<td>0.000</td>
</tr>
<tr>
<td>B * B</td>
<td>-1.1982</td>
<td>0.062</td>
</tr>
<tr>
<td>C * C</td>
<td>-3.7755</td>
<td>0.000</td>
</tr>
<tr>
<td>A * B</td>
<td>1.5250</td>
<td>0.073</td>
</tr>
<tr>
<td>A * C</td>
<td>-1.4000</td>
<td>0.098</td>
</tr>
<tr>
<td>B * C</td>
<td>0.3625</td>
<td>0.661</td>
</tr>
</tbody>
</table>

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3.3.4 Summary of Experiment Results

From Figure 1, the results show that the three factors the best fit to the strength values, the top and bottom sealing tends to be the same. Therefore, the factor values for the strength of the top and bottom sealing marks at the highest values are set to be equal to the sealing temperature of 126 °C, film feed speed 18 rpm and degree Shutoff valve 115 degrees. From the average predicted value strength of the top sealing was 56.7 Newton and in the range of 56.5 - 57.5 Newton and bottom is 55.2 Newton and in the range 54.5 - 56 Newton at 95% confidence level.

3.3.5 Test to Confirm Results

When got the optimum condition forming of packing and sealing is achieved the samples were tested to confirm with the 100 samples. The test results showed that. The average seal strength of the top is 56 Newton. Standard deviation 3.01, with mean values in the range 55.5 - 56.6 Newton and the average of the seal strength of the bottom is 55 Newton, the standard deviation of 3.0 the average range was 54.5-55.6 Newton at 95% confidence level. The average strength of the top and bottom sealing marks was close to the values of 56.7 Newton and 55.2 Newton, respectively. Including the range between the minimum value and the maximum value of the average strength, the top and bottom sealing marks it is greater than the minimum average set at 51.4 Newton. The average and variance of the strengths, sealing, top and bottom seals were tested for difference, before and after the test results, there were significant differences. 0.05.

Results

From experimental results were Sealing Temperature 126 °C, film feed speed 18 rpm and degree Shutoff valve 115 degrees was applied to the forming process of packing and sealing between May to July 2017. It was found that the average strength of the top sealing crest increased from 34 Newton to 56 Newton, the standard deviation decreased from 3.14 to 2.92, and the average strength of the seal of the bottom is increased from 34 Newton to 55 Newton. The standard deviation decreased from 3.21 to 2.98, and from the average test of strength, the upper and lower sealing are more than the target

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average mean has set 52 Newton. And the standard deviation decreased. Significantly, the statistical significance was 0.05. It was concluded that the mean of the top and bottom sealing strengths was increased and the variance decreased.

By the average strength of the top seal will be in the range 55.5-56.6 Newton and the average the strength of the seal bottom is in the range 54.5-55.6 Newton. Therefore, if set the condition of the factor determines as the result of the research there will be an average of the top and bottom seal strengths not less than 55.5 Newton 54.5 Newton. At the 5% confidence level, respectively. Which is more than the average set at least 51.4 Newton. The result of the improvement is that waste is caused by the sealing cause decreased from 81.5% to 3.68% As a result of all waste of the product packing process decreased from 7.84% to 2.47%.

Conclusion & Recommendations

This research is study the optimum conditions in the product packaging process with experimental design to reduce waste in such a process. From problem analysis was found that all wastes detected in the product packing process were 7.84% the highest proportion of Tomato Sauce products reached 6.61% .The highest proportion of Tomato Sauce products reached 6.61% or accounted for a loss of 84.29% of the total loss value. Therefore, this research has selected Tomato Sauce products as the study of products that have the highest loss ratio. And the waste from the leak package from the top and bottom sealing 81.5% of the total loss by analyzing the leaky characteristics from those involved. It was found that sealing was less than 51.4 Newton. Therefore, study the optimal conditions to increase the strength of sealing packaging sauce in the packaging process of the product seal maximum strength. By starting to evaluate assess the stability of the process, it was found that all data points were plotted on the process control chart it is in control lines and the data is random. Then, the cause and effect on diagram was analyzed to determine the factors that affect the seal strength and filtering the basics by using techniques to analyze the patterns of waste and the effects of the process (process FMEA)

In conclusion, there are 3 factors that may affect the seal strength are seal temperature, film speed, and degrees off Shutoff valve. The experimental design was designed Central Composite Design to analyze for the right conditions use Response Surface Methodology to find the best value. It was found that the seal temperature 126 ºC, film feed speed 18 rpm, and degrees off Shutoff valve 115 degrees give highest strength of top and bottom sealing. after the application of experimental results, the top seal strength increased from 34 Newton to 56 Newton or 64.71%, the standard deviation decreased from 3.14 to 2.92, or decreased 7.17%. And the strength of the bottom seal increased from 34 Newton to 55 Newton, or 61.77%, the standard deviation decreased from 3.21 to 2.98, or decreased 7.17%.

In conclusion, the average strength of the top and bottom sealing after the update has increased with an average of at least 55 Newton and a range of 54.5-55.6 Newton, which is the lowest average that is greater value than the minimum average set at 51.4 Newton. As a result of the improvement, the waste caused by sealing decreased from 81.5% to 3.68%. As a result of the improvement the waste of process caused by sealing decreased from 81.5% to 3.68%, as a result, the total waste of the package packaging process decreased from 7.84% to 2.47% or decrease 5.37%. Based on the hypothesis testing it was found to be in accordance with the above mentioned statistical significance of 0.05. The quality of the seasoning sauce remains the same. This research has achieved its intended purpose 5.1 Suggestions, Based on the results of the research, it was set the standards for configuring forming machine components in packing and sealing the machine operator must have a good understanding of the machine operation, should give the basic knowledge needed to be provided to those involved preparation of a standardized work manual and to continually apply statistical process control principles.

5.2 Suggestions, from considering the problematic product of waste of Tomato sauce that have stain on the package still remains the most this issue should be addressed to continue the improvement.
### Table 1:
shows all wastes in the packaging process. (January - March 2017)

<table>
<thead>
<tr>
<th>Product</th>
<th>Production number (pack)</th>
<th>Waste (pack)</th>
<th>Waste (%)</th>
<th>Loss worth product type (USD)</th>
<th>Average per month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Production number (pack)</td>
</tr>
<tr>
<td>Tomato Sauce</td>
<td>4,306,770</td>
<td>393,840</td>
<td>6.61</td>
<td>18,880.87</td>
<td>1,435,590.00</td>
</tr>
<tr>
<td>Chili Sauce</td>
<td>733,106</td>
<td>32,110</td>
<td>0.54</td>
<td>1,539.36</td>
<td>244,368.67</td>
</tr>
<tr>
<td>Chili Tomato Sauce</td>
<td>458,515</td>
<td>23,476</td>
<td>0.39</td>
<td>1,125.45</td>
<td>152,838.33</td>
</tr>
<tr>
<td>Salad Sauce</td>
<td>366,409</td>
<td>13,443</td>
<td>0.23</td>
<td>210.08</td>
<td>122,136.33</td>
</tr>
<tr>
<td>another</td>
<td>91,673</td>
<td>4,382</td>
<td>0.07</td>
<td>644.50</td>
<td>30,557.67</td>
</tr>
<tr>
<td>Total</td>
<td>5,956,473</td>
<td>467,251</td>
<td>7.84</td>
<td>22,400.26</td>
<td>1,985,491.00</td>
</tr>
</tbody>
</table>

### References


---

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Development of Media Learning on Breastfeeding
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Abstract

This research had the objectives to develop media learning for breastfeeding and to evaluate the efficiency of the developed media learning. The sample employed in this research comprised of pregnant women and nursing mothers. An educational medium for breastfeeding and a survey on the satisfaction towards such educational medium were used as the tools for data collection. The statistics used in the analysis consisted of mean, standard deviation, and t-test. According to the results, the media learning for breastfeeding that had been developed in this research indicated the highest level of overall satisfaction amongst users, at the level of 4.72. Based on the opinions given by the sample, it was evident that the media learning for breastfeeding was highly beneficial to pregnant women and was easily comprehensible. In addition, such media learning instilled an inspiration in nursing mothers in the aspect of breastfeeding.

Keywords— Media Learning, Breastfeeding, Infographic

Introduction

Mother’s milk is a nutritionally balanced and best-nutritious food for infants and young children moreover, it is suitable for growing and developing of body, brain and uncompleted developing organs. The more infants get mother’s milk, the more healthy they are. By suggestion of WHO, infants should only obtain breast milk in the first period, for 6 month then drink breastmilk with food until they are 2 years old or more.

The current breastfeeding in Thailand from Multiple Indicator Cluster Survey: MICS by National Statistical Office (Thailand) supported by UNICEF based on the maternal breastfeeding patterns in Thailand in 2012. The findings were merely breastfeeding in the 0-1 age range and 6 month at 30,15 and 12.3 percent, respectively. To compare with 2006 in the same age range were at 11.6, 7.6 and 5.4 percent. This was a good change to a certain extent. Holistic Approach of breastfeeding babies during the first 6-7 months was still on a good level at 55 percent but did not achieve breastfeeding rates in infants less than 6 months old by Department of Health in 2013 which was not less than 50%. The World Health Organization set at 35 percent.

The rate of breastfeeding has declined, especially in the first two months which was a critical time and important transition time to succession in breastfeeding.

Because during this time was the first postpartum period that mother had changed both physical and mental considerably cause she might have to adapt for her changing body and learn to adapt to the mother roll also to parenting. If mother can’t pass the crisis time, it will effect on breastfeeding in finally. The crucial factor which made the mother did not succeed in breastfeeding caused by lacking of knowledge, lacking of experience or when they have questions, they will not be able to find the answer until the stress and abandonment of the intention to breastfeeding.

Objectives
1. To provide learning media on breastfeeding.
2. To evacuate the efficiency of learning media on breastfeeding.

Literature Review

The researcher had studied theory, textbooks and related research following as;
A. Related concepts to teaching through learning media.
B. Nowadays, technology especially multimedia and electronic media is used as an equipment for teaching and learning popularly. Due to it is interesting and flexible in time and place which supports process of learning and responds the need to development of learner.

*The necessary of learning media.*
Learning media helps learner to interesting in and promoting creative thinking. It can describe a complicate knowledge to be easier also raise effectively teaching to save time and labor.

*Types of teaching media.*
Edgar Dale, 1965, 42 – 43 had divided teaching media into 3 classes as;
1. Software, it was a storage media itself which was separated into 2 types as;
   1.1 Type of material that can convey knowledge. No need to rely on another device for example; LP, Globe, Pictures, Model and etc.
   1.2 Type of material that cannot convey knowledge. It require another devices such as film, movie and slide.
2. Hardware, it was an intermediary or a passage to make the information or knowledge that is recorded in the material that can be conveyed to be seen or heard for instance; projector plate.
3. Techniques and Methods is medium that is conceptual or procedural which can be used to help teaching such as game, simulation, roleplay and demonstration.

*Principles of selection teaching materials.*
A selection of teaching is important thing as a teacher directly and must use judgment, make decision for selecting proper media for learner age and content to make the most benefit for learners. The instructor must take the following steps;
1. Understanding in teaching contents.
2. Clearly setting the purpose of teaching.
3. Design and use specific technic to teach.
4. To set activities in teaching.
5. Setting media which would use to be suitable for learners age and content.

*B. Infographics*
Infographics is from Information + Graphics that means to bring the data or knowledge to summarize in the form of data and graphics may be lines, symbols, graphs, charts, diagrams, maps and etc. The design is a slide or an animation. The content or information presented can be easily understood. The media can be used to present all of meaning to audience without presenter. The design of Infographics is divided into 2 parts.
1. Information aspect, the information which was presented must have been interesting and accuracy.
2. Design aspect, the design must have pattern, structure and beauty with easy understanding and actual availability.

*Advantages of infographics*
Normally the human brain is aware of the information through sensory and sensory receptors in the body, 70 percent are in the eye. Infographics is divided in learning by looking, it can help improve understanding of information and ideas also improve thinking ability and develop ideas that cause recipients have more memory to recognize. Long time ago, humans had experience to communication through pictures thus the perception of information through images is automatically understood. Learning with images is one reason that can raise efficiency for better memory. Infographics communication is very popular nowadays because this contents of communication appeal to the recipient. The performance of media has a main point that is easy to understand. The information is complete without the recipient having to spend a lot of time understanding. In addition, Infographics can display a variety of formats, such as images in journals, animation or electronic media.

*C. Quick Response Code Theory Meaning of Quick Response Code*
Quick Resond Code is Two-dimensional barcode or 2D Barcode was Invented in 1994 By Denso Wave Inc. in Japan. The purpose is to develop the bar code one dimensional produced 1952 Developed to be capable. In a variety of storage
formats. More data capacity. They can respond quickly to decoders which is Open source software that can bring developed applications. It is free of charge QR Code and it is a collection of URL of the site. This is usually the case URL, it looks complicated. There are several characters but with QFR code, you can use the reader to scan the QF code, which automatically connects to the QFX web page and saves the data automatically

Methodology
The sample; Pregnant women, Lactating, those who are interested in breastfeeding information.
A. Instrument
1. Learning media on breastfeeding.
2. Satisfaction Questionnaire on Learning Materials for Breastfeeding.

B. The process of creating and finding quality tools.
Creating a Learning Media on Breastfeeding
1. To collect data to make learning media.
2. To assign topics and knowledge of each information.
3. To bring information to create learning media in infographic.
4. To check the accuracy.
5. To distribute learning media through QR Code technology.

Satisfaction Questionnaire on Learning Materials for Breastfeeding.
Satisfaction Questionnaire on Learning Materials for Breastfeeding, there is 5 rating scale.

C. Collection methodology
Collecting data from organizations supporting breastfeeding to develop a learning media. Data is stored as text and images. Classified by type of knowledge landscape.

D. Analysis
Analyzing data from the satisfaction questionnaire from the sample using the learning media on breastfeeding by the average percentage and standard deviation.

Average
\[ \bar{X} = \frac{\sum X}{N} \]
\[ \bar{X} = \text{Average rating} \]
\[ \sum X = \text{The sum of the scores} \]
\[ N = \text{Amount} \]

Standard Deviation
\[ S.D = \frac{\sum (X-\bar{X})}{N} \]
Standard Deviation

\[ \sum (X - \overline{X}) = \text{The sum of scores minus the Average rating} \]

\[ N = \text{Amount} \]

Results

The results of the research on the satisfaction of the users of the breastfeeding media were presented in table 1.

Table 1:

*Results of the evaluation of user satisfaction with learning media*

<table>
<thead>
<tr>
<th>List</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \overline{x} )</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
</tr>
<tr>
<td>1. Compliance with objectives.</td>
<td>4.85</td>
</tr>
<tr>
<td>2. Clear content structure</td>
<td>4.75</td>
</tr>
<tr>
<td>3. Content presentation is easy to understand.</td>
<td>4.89</td>
</tr>
<tr>
<td>4. Language is appropriate.</td>
<td>4.79</td>
</tr>
<tr>
<td>5. Meaningful illustrations.</td>
<td>4.86</td>
</tr>
<tr>
<td>6. Pattern is interesting</td>
<td>4.77</td>
</tr>
<tr>
<td>7. Can be applied in daily life.</td>
<td>4.87</td>
</tr>
<tr>
<td>8. The average</td>
<td>4.82</td>
</tr>
</tbody>
</table>

| **The promotion of learning.** | | | |
| 1. Encourage learning. | 4.53 | 0.21 | Most satisfying |
| 2. Promote understanding of content. | 4.71 | 0.15 | Most satisfying |
| **The average** | 4.62 | 0.19 | Most satisfying |
| **Total average** | 4.72 | 0.14 | Most satisfying |

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From Table 1, the results of the evaluation of the satisfaction of the learning media. The opinions of the sample that affect the learning media on breastfeeding. Overall, the level of satisfaction was the highest. (\(\bar{x}=4.72, S.D=0.14\)) When considering each side, found that content was the highest level of satisfaction. (\(\bar{x}=4.82, S.D=0.05\)) When considering the sub-clause, it was found that User satisfaction is the most satisfying content. (\(\bar{x}=4.89, S.D=0.08\)) Secondly, it can be applied in real life (\(\bar{x}=4.87, S.D=0.08\)) and The promotion of learning has the average level of satisfaction was highest. (\(\bar{x}=4.62, S.D=0.19\)) When considering the sub-clause, it was found that users satisfy Promote understanding of content is the highest. (\(\bar{x}=4.71, S.D=0.15\)) The second is to stimulate learning at the highest level. (\(\bar{x}=4.53, S.D=0.21\))

Discussion and Conclusion

This research is to developing learning media on breastfeeding by infographics and applying QR code into accessible the media to be convenient. The media consists of benefits of breastfeeding, how to breastfeed, Preparing for breastfeeding, Stocking up milk to make time for the mother to return to work and the amount of milk demanded by the age of the baby. The contents have passages and images in Infographic pattern and use QR Code to be accessible. This allows students to learn anywhere and anytime.

Evaluation of media user satisfaction on breastfeeding. The overall satisfaction of the users was at the highest level. The average is 4.72 and the standard deviation is 0.93. There are also additional comments from users. Learning about breastfeeding makes learning in the subject easy. In the case of pregnant mothers who have never had the experience of feeding children, comment this learning tool is very useful. Because after childbirth. Mothers will have limited time to study information. The use of media that is collected in the form of infographic graphics. Easy to understand will not take long, it is easy to learn from mobile phone even when mother are breastfeeding. It also promotes confidence and confidence in breastfeeding for as long as possible.

It can be concluded that the research is a quality learning media that can be used to learn effectively.

Suggestions

We should study and develop the learning media using modern technology and take into consideration the ease of learning and convenient access to the content of the user. It may add more channels to search for topics that are easier to access.

Acknowledgment

The author would like to thank the Research and Development Institute, College of Innovation and Management, Suan Sunandha Rajabhat University, Bangkok, Thailand for financial support and Thai Breastfeeding Center Foundation for data support.

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Peer-review under responsibility of the Scientific & Review committee of SAN-2019.
Development of Media Learning on Breastfeeding
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Abstract

This research had the objectives to develop media learning for breastfeeding and to evaluate the efficiency of the developed media learning. The sample employed in this research comprised of pregnant women and nursing mothers. An educational medium for breastfeeding and a survey on the satisfaction towards such educational medium were used as the tools for data collection. The statistics used in the analysis consisted of mean, standard deviation, and t-test. According to the results, the media learning for breastfeeding that had been developed in this research indicated the highest level of overall satisfaction amongst users, at the level of 4.72. Based on the opinions given by the sample, it was evident that the media learning for breastfeeding was highly beneficial to pregnant women and was easily comprehensible. In addition, such media learning instilled an inspiration in nursing mothers in the aspect of breastfeeding.

Keywords— Media Learning, Breastfeeding, Infographic

Introduction

Mother's milk is a nutritionally balanced and best-nutritious food for infants and young children moreover, it is suitable for growing and developing of body, brain and uncompleted developing organs. The more infants get mother’s milk, the more healthy they are. By suggestion of WHO, infants should only obtain breast milk in the first period, for 6 month then drink breastmilk with food until they are 2 years old or more.

The current breastfeeding in Thailand from Multiple Indicator Cluster Survey: MICS by National Statistical Office (Thailand) supported by UNICEF based on the maternal breastfeeding patterns in Thailand in 2012. The findings were merely breastfeeding in the 0-1 age range and 6 month at 30.15 and 12.3 percent, respectively. To compare with 2006 in the same age range were at 11.6, 7.6 and 5.4 percent. This was a good change to a certain extent. Holistic Approach of breastfeeding babies during the first 6-7 months was still on a good level at 55 percent but did not achieve breastfeeding rates in infants less than 6 months old by Department of Health in 2013 which was not less than 50%. The World Health Organization set at 35 percent.

The rate of breastfeeding has declined, especially in the first two months which was a critical time and important transition time to succession in breastfeeding.

Because during this time was the first postpartum period that mother had changed both physical and mental considerably cause she might have to adapt for her changing body and learn to adapt to the mother role also to parenting. If mother can’t pass the crisis time, it will effect on breastfeeding in finally. The crucial factor which made the mother did not succeed in breastfeeding caused by lacking of knowledge, lacking of experience or when they have questions, they will not be able to find the answer until the stress and abandonment of the intention to breastfeeding.

Objectives
1. To provide learning media on breastfeeding.
2. To evacuate the efficiency of learning media on breastfeeding.

Literature Review

The researcher had studied theory, textbooks and related research following as;
A. Related concepts to teaching through learning media.

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B. Nowadays, technology especially multimedia and electronic media is used as an equipment for teaching and learning popularly. Due to it is interesting and flexible in time and place which supports process of learning and responds the need to development of learner.

The necessary of learning media.
Learning media helps learner to interesting in and promoting creative thinking. It can describe a complicate knowledge to be easier also raise effectively teaching to save time and labor.

Types of teaching media.
Edgar Dale, 1965, 42 – 43 had divided teaching media into 3 classes as;
1. Software, it was a storage media itself which was separated into 2 types as;
   1.1 Type of material that can convey knowledge. No need to rely on another device for example; LP, Globe, Pictures, Model and etc.
   1.2 Type of material that cannot convey knowledge. It require another devices such as film, movie and slide.
2. Hardware, it was an intermediary or a passage to make the information or knowledge that is recorded in the material that can be conveyed to be seen or heard for instance; projector plate.
3. Techniques and Methods is medium that is conceptual or procedural which can be used to help teaching such as game, simulation, roleplay and demonstration.

Principles of selection teaching materials.
A selection of teaching is important thing as a teacher directly and must use judgment, make decision for selecting proper media for learner age and content to make the most benefit for learners. The instructor must take the following steps;
1. Understanding in teaching contents.
2. Clearly setting the purpose of teaching.
3. Design and use specific technic to teach.
4. To set activities in teaching.
5. Setting media which would use to be suitable for learners age and content.

B. Infographics
Infographics is from Information + Graphics that means to bring the data or knowledge to summarize in the form of data and graphics may be lines, symbols, graphs, charts, diagrams, maps and etc. The design is a slide or an animation. The content or information presented can be easily understood. The media can be used to present all of meaning to audience without presenter. The design of Infographics is divided into 2 parts.
1. Information aspect, the information which was presented must have been interesting and accuracy.
2. Design aspect, the design must have pattern, structure and beauty with easy understanding and actual availability.

Advantages of infographics
Normally the human brain is aware of the information through sensory and sensory receptors in the body, 70 percent are in the eye. Infographics is divided in learning by looking, it can help improve understanding of information and ideas also improve thinking ability and develop ideas that cause recipients have more memory to recognize. Long time ago, humans had experience to communication through pictures thus the perception of information through images is automatically understood. Learning with images is one reason that can raise efficiency for better memory. Infographics communication is very popular nowadays because this contents of communication appeal to the recipient. The performance of media has a main point that is easy to understand. The information is complete without the recipient having to spend a lot of time understanding. In addition, Infographics can display a variety of formats, such as images in journals, animation or electronic media.

C. Quick Response Code Theory Meaning of Quick Response Code
Quick Respond Code is Two-dimensional barcode or 2D Barcode was Invented in 1994 By Denso Wave Inc. in Japan. The purpose is to develop the bar code one dimensional produced 1952 Developed to be capable. In a variety of storage
formats. More data capacity. They can respond quickly to decoders which is Open source software that can bring developed applications. It is free of charge QR Code and it is a collection of URL of the site. This is usually the case URL, it looks complicated. There are several characters but with QFR code, you can use the reader to scan the QF code, which automatically connects to the QFX web page and saves the data automatically

Methodology
The sample; Pregnant women, Lactating, those who are interested in breastfeeding information.
A. Instrument
1. Learning media on breastfeeding.
2. Satisfaction Questionnaire on Learning Materials for Breastfeeding.

B. The process of creating and finding quality tools.
Creating a Learning Media on Breastfeeding
1. To collect data to make learning media.
2. To assign topics and knowledge of each information.
3. To bring information to create learning media in infographic.
4. To check the accuracy.
5. To distribute learning media through QR Code technology.

Satisfaction Questionnaire on Learning Materials for Breastfeeding.
Satisfaction Questionnaire on Learning Materials for Breastfeeding, there is 5 rating scale.

C. Collection methodology
Collecting data from organizations supporting breastfeeding to develop a learning media. Data is stored as text and images. Classified by type of knowledge landscape.

D. Analysis
Analyzing data from the satisfaction questionnaire from the sample using the learning media on breastfeeding by the average percentage and standard deviation.

Average

\[ \bar{X} = \frac{\sum X}{N} \]

\[ \bar{X} = \text{Average rating} \]

\[ \sum X = \text{The sum of the scores} \]

\[ N = \text{Amount} \]

Standard Deviation

\[ S.D. = \frac{\sum (X-\bar{X})}{N} \]
Results

The results of the research on the satisfaction of the users of the breastfeeding media were presented in table 1.

Table 1:  
Results of the evaluation of user satisfaction with learning media

<table>
<thead>
<tr>
<th>List</th>
<th>Information</th>
<th>( \bar{x} )</th>
<th>S.D.</th>
<th>analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Content</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Compliance with</td>
<td>4.85</td>
<td>0.10</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td>objectives.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Clear content</td>
<td>4.75</td>
<td>0.14</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td>structure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Content presentation</td>
<td>4.89</td>
<td>0.08</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td>is easy to understand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Language is</td>
<td>4.79</td>
<td>0.12</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td>appropriate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Meaningful</td>
<td>4.86</td>
<td>0.10</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td>illustrations.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Pattern is</td>
<td>4.77</td>
<td>0.13</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td>interesting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Can be applied in</td>
<td>4.87</td>
<td>0.08</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td>daily life.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>The average</td>
<td>4.82</td>
<td>0.05</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The promotion of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>learning.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Encourage learning.</td>
<td>4.53</td>
<td>0.21</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td>Promote</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>understanding of</td>
<td>4.71</td>
<td>0.15</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td>content.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The</td>
<td>average</td>
<td>4.62</td>
<td>0.19</td>
<td>Most satisfying</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total average</td>
<td>4.72</td>
<td>0.14</td>
<td>Most satisfying</td>
</tr>
</tbody>
</table>

*S.D= Standard Deviation

\[ \sum (X - \bar{X}) = \text{The sum of scores minus the Average rating} \]

\[ N = \text{Amount} \]

\[ \sum X \]
From Table 1, the results of the evaluation of the satisfaction of the learning media. The opinions of the sample that affect the learning media on breastfeeding. Overall, the level of satisfaction was the highest. (\( \bar{x} = 4.72, S.D = 0.14 \)) When considering each side, found that content was the highest level of satisfaction. (\( \bar{x} = 4.82, S.D = 0.05 \)) When considering the sub-clause, it was found that User satisfaction is the most satisfying content. (\( \bar{x} = 4.89, S.D = 0.08 \)) Secondly, it can be applied in real life (\( \bar{x} = 4.87, S.D = 0.08 \)) and The promotion of learning has the average level of satisfaction was highest. (\( \bar{x} = 4.62, S.D = 0.19 \)) When considering the sub-clause, it was found that users satisfy Promote understanding of content is the highest. (\( \bar{x} = 4.71, S.D = 0.15 \)) The second is to stimulate learning at the highest level. (\( \bar{x} = 4.53, S.D = 0.21 \))

Discussion and Conclusion

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Suggestions

We should study and develop the learning media using modern technology and take into consideration the ease of learning and convenient access to the content of the user. It may add more channels to search for topics that are easier to access.

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A Corpus-Based Approach to Lessons Development for EFL Reading Course

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2Naresuan University, Thailand

Abstract

The purposes of the current study were to develop the corpus-based lessons in reading English newspaper course and to determine the effectiveness of the corpus-based vocabulary exercises. The samplings of the study was forty-two-third-year students majoring English, the Faculty of Sciences and Liberal Arts, Rajamangala University of Technology Isan. To instruct the selected 50 vocabulary words, the corpus-based vocabulary exercises were constructed on a theoretical framework developing from the Constructivism Theory, Second Language Acquisition Theory, and Vocabulary Learning and Teaching Theories that were used for a period of 10 weeks. The research instruments of the current study were the pre-test, the post-test, and the questionnaire. The quantitative data were analyzed through the paired sample t-test and the qualitative data were analyzed by using the software package. The findings revealed that using corpus-based lessons were effective and could help EFL students to improve their vocabulary knowledge, perceive the words, comprehend the meaning of the words, and also employ the words properly in the news contexts.

Keywords— Corpus-Based Approach, Lessons Development, EFL, Reading

Introduction

As the expansion of globalization, English has becoming more and more important alongside the world today. In addition, it is known as the most powerful language for the international relations with over a quarter of the world. It is also understood or spoken by over 1 billion people and approximately 400 million native speakers speaking the English language. As developing country, Thailand has participated in international business and commerce thus the prerequisite of using English for communication with other countries is very important. It has been provided as an international language in order to use not only as a way of transferring thoughts and ideas but also use as a channel for forging cultural ties, and diplomatic relations, economy, and education. (Chaimongkol, 2000). For these reasons, it is considered as the fundamental prerequisite for people whose their first language is not English and incorporated into the educational system in various countries all over the world. Thailand also gives importance to English education, and the government has provided English instruction from primary school to university. The objective of language learning for Thais is to be able to use it for communication in their everyday lives and their study at higher level.

In the world today, reading is one of the most accepted and substantial ways of learning other languages that also helps students to develop their knowledge. Due to the increasing use of English in international contexts, students’ perception of reading is an essential feature and the competence of reading in English has become needed for them especially in EFL contexts where English is used as a foreign language, hence reading has been highlighted as the important skill (Robb & Susser, 1989). In the same way, it is unavoidable to follow the changing world so it can be noted that it is necessary for students to spend a lot of time in reading various sorts of written texts that serve practical information (Clark et al, 1988). One primary kind of reading material is newspaper that is regarded as one of the most accepted sources of knowledge, forwarding news, entertainment and ideas for the readers.

Moreover, newspaper conveys news and information to a considerable number of readers in very short time because of its functions which speaks to their readers in their readers’ language (Photi-on, 1997 & Macalister, 2001). Thus, people could apply them as a basic source for forwarding various sorts of skills and knowledge. Hwang and Nation (1989) suggested that newspaper is much used in reading courses for promoting reading skills and expanding lexical knowledge. There are three reasons for using newspaper in classroom. The first reason is that newspaper is easy and cheap to access both in hard
copy and online version. It is also an authentic lessons that is generally read by the native speakers and it also serves large alternatives for interesting topics that learners or teachers could select

reading texts. In addition, it is not only a good way of brushing up old vocabulary but also a great way of learning new vocabulary from context as well.

Although reading is emphasized in EFL courses for Thai learners, they still have a trouble with vocabulary which is essential to help them understand their texts. Since, many researches in Thailand found that the difficulty in lanague learning of Thai students is the lack of vocabulary knowledge (Chansin, 2007, Duadsuntia, 2008, Boonkongsaen & Intarapraser, 2014).

As suggested by Read (2000) that vocabulary is a word or a group of word combination to make a language that provides a grammatical and lexical function in both spoken and written texts. Additionally, it is fundamental to lanaguge and extremely important to lanaguge learners as knowing vocabulary is a key to comprehension and a large vocabulary can assist learners in learning a language since the more vocabulary students know, the better they understand what they read (Meara, 1996 & Nation, 2001). The outstanding role of vocabulary in language learning has been continuously perceived and there is doubtless that vocabulary acquisition is the most significant needs of any language learners. Consequently, it can be said that vocabulary is very meaningful to help EFL learners to comprehend the language (Krashen & Terrell, 1983; Krashen, 1989; Leki & Carson, 1994). One of the most effective way to be able to read is knowing the high frequency words as they could help students better understand without hesitation what is being read.

High frequency words are a core of learner’s thought in learning vocabulary as recommended by Nation and Newton (1997). Students could master these words by perception and accompany them to their vocabulary. Similarly, the competence of understanding words by achieving from encountering them in particular contexts is still fruitful as it could be valuable for learners to accomplish their understanding as well as they could discover new words when they learn with new lessons. Thus, deciding which words should be taught and learners has been controversy in one of the recent trends is to accept that is called corpus linguistics.

Corpus linguistics is used in the language classroom since the 1980s through concordance lines, which are all the instances of a word or node in a corpus. Further, it is compiled for different objectives such as English teaching lessons in grammars, books, or dictionaries which display how a language is really used (Souza, 2017). As suggested by many researchers that this approach is applied as the fundamental part in vocabulary development and lessons developed by using corpora are accepted to be more authentic and enabled researchers to determine with a high degree of particularity that appearing words and phrases a language learner would take advantage most from studying and (Biber, Conrad, & Reppen, 1994; McCarthy & Carter, 1997; Simpson & Mendis, 2003; Schmitt et. al, 2004).

In this way, selecting the vocabularies that are most frequent and useful to guarantee the contexts in which words are used as authentic ones, based on the contexts that appear in corpora and most related to their EFL lives, is undeniably necessary. Consequently, the main reason for undertaking the current study is to simplify the reading English newspaper comprehension by building up familiarity with English newspaper key words and develop EFL corpus-based lessons for reading English newspaper.

Objectives of the Study

The purposes of the current study are as follows:
1. To develop the reading English newspaper corpus-based materials for EFL students.
2. To determine the effectiveness of the reading English newspaper corpus-based materials.

Methodology

The Samplings

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Forty-three students majoring English who enrolled in the Reading English Newspaper course in their third year were selected by the purposive sampling method.

The Source of Data for the Corpus

The source of data for the English Newspaper Corpus (ENC) analysis is the online news articles from the general, business, and sports section of the Nation Newspaper during the period of one month from April 1st to April 30th, 2018 (Veerachaisantikul et. al, 2017). The total numbers of news articles were 422 files and the total number of tokens or running word were 198,742 words. As mentioned earlier, the current study aimed to investigate high frequency words and key words in order to use as data of developing the course lessons thus English news articles in an online version during the period of one month were chosen as a significant input for this study. The information of the current corpus is shown in Table 1.

Table 1: General Statistic of Each File

<table>
<thead>
<tr>
<th></th>
<th>General</th>
<th>Sports</th>
<th>Business</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of articles</td>
<td>150</td>
<td>151</td>
<td>121</td>
<td>422</td>
</tr>
<tr>
<td>No. of tokens</td>
<td>86,992</td>
<td>69,004</td>
<td>42,746</td>
<td>198,742</td>
</tr>
<tr>
<td>Word types</td>
<td>8,529</td>
<td>6,837</td>
<td>5,479</td>
<td>20,845</td>
</tr>
</tbody>
</table>

According to Table 1, the token running words of each file were 86,992 for general, 69,004 for sports, and 42,746 for business. The general file had the highest number of token words while the business file had the smallest number of tokens. As for word types, the general file also had the highest number of the different word types (8,529) whereas the business file had the smallest number of different word types.

Procedures of Corpus Construction

The research procedures of this study consisted of eight steps in order to profile the English Newspaper Corpus (ENC). The method of data analysis can be illustrated in Figure 1 which are relevant to how data were investigated and how to create a selection of texts in order to achieve the top 50 most frequently occurring word list.

Step 1: The news articles in HTML (online)
To achieve the data, the news articles in the general, business, and sports section of the online version were applied as significant data for this study. The news articles were collected for a period of one month from April 1st to April 30th, 2018.

Figure 1: Procedures of Corpus Construction
Step 2: Inserting text into Microsoft Word

Thereafter gaining the data in HTML format, the online texts from the general, business, and sports news articles were inserted into “Microsoft Word” as a word document (*.doc) and the total of news articles were 422 files.

Step 3: Checking the errors and spelling

The checking of the errors and spellings of the words analysis were checked before adopting texts into the analyzing program by this step.

Step 4: Converting news articles into plain text (*.txt)

After checking of the errors and spellings in word documents (*.doc) then we saved all news articles as plain texts in order to make the analyzing program better.

Step 5: WordSmith Tools Version 6

All news articles were inserted into the “WordSmith Tools Version 6” (Scott, 2012) for analyzing the most frequent words in the English Newspaper Corpus (ENC).

Step 6: Getting High Frequency Words

After inserting all news articles into the “WordSmith Tools Version 6”, the program was given the high frequency words in the text files.

Step 7: Classifying the Key Words in Newspaper

After getting the most frequently words of the English Newspaper Corpus (ENC), the frequency words list was eyed by applying the Oxford Advanced Learner’s Dictionary manually to classify the key words. Later, the top 50 most frequently occurring key words were achieved. Moreover, these words occurring in the ENC at least 50 times.

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Procedures of Making Lessons

The reading English newspaper lessons consisted of six activities. These activities composed of 50 words to be studied and each lesson comprised 10 words, which were presented in six vocabulary activities. The six vocabulary activities included:

1. **Words Learning**
   This activity was designed to help the students to realize the 10 target words and introduced the target words to samplings that to be learned in each activity. The 10 words is a proper number of words per lesson as mentioned by Wallace (1984). Thus, the target words in each lessons were ordered alphabetically in order to improve the awareness of the meaning of words.

2. **Try it Out**
   It is an activity that aimed to check which of the target words they know and do not know. After learning words, the students need to check out their vocabulary knowledge first for getting the picture of their learning improvement (Read, 2000).

3. **Noticing Words**
   This activity was created to remark the target words that students should pay attention to the unknown words. It was planned to emphasize learners to the target words (Nation, 2001).

4. **Retrieval Practice**
   It is an activity which students can guess the meaning of target words from contexts. In this practice, students might perceive words and comprehend their meanings toward texts throughout the exercise, or the teacher’s explanation or dictionary using. This way can help students to memory the words better when they recall those words during the task.

5. **Practicing**
   This activity focused on practicing students with vocabulary by matching, gap filling, and word association. It is required students to remember the target words and at least of their meanings or requiring just partial knowledge of students.

6. **Vocabulary Test**
   It is designed to rate the development of students in their vocabulary learning after accomplishing each lesson. As Nation (2001) stated that students should know their learning development in order to get an evaluation after learning.
Research Instruments

1. The Pre-Test and Post-Test

The pre-test and post-test were used as tone of important research instruments in the current study. The pre-test was designed to set up the guideline to the samplings and the post-test was purposed to examine whether the students have accomplished their improvement or not after they have learnt the target words through the lessons. The pre-test and post-test were divided into two parts that are multiple choices and translation test. The first part contained 30 multiple-choice questions with four alternatives. When they make multiple answers, they will receive one point for every correct answer and receive zero point for every wrong answer. The second part is translation part comprised of 30 items to evaluate the students’ understanding of perceiving the target words and comprehend their meanings. The translation test was designed by incidentally choosing 30 out of 50 target words that students have learnt in the lessons. In this part, students have to translate the meanings of target words from English to Thai with the answer keys which was based on the dictionaries.

2. The Checklist Questionaires

The current study was used two questionaires in order to get the valid results. The first questionnaire aimed to explore the point of views of students in order to find out the effectiveness of the reading English newspaper corpus-based materials. This questionnaire inquired about the students’ opinions on the lessons. For the second questionnaire, it was designed to know the opinions of the students on their vocabulary improvement after learning the target words through the reading English newspaper corpus-based materials. Both of questionnaires consisted of two main parts: general information and opinion on their vocabulary learning improvement after learning the through reading English newspaper corpus-based materials. In order to evaluate the results, the Likert’s scale was used in the current study. The Likert’s scale has five classifications and comprises of a description and the explanatory description and a sequence answer were five-point rating scales used for asking the students’ opinion are as follows:

- 5 = Strongly Agree
- 4 = Agree
- 3 = Neutral
- 2 = Disagree
- 1 = Strongly Disagree

Results

The purposes of the current study were to develop the reading English newspaper corpus-based materials and to determine the effectiveness of the corpus-based lessons whether it improved the EFL students’ vocabulary knowledge. The pre-test and post-test were used as the research instruments to obtain the findings of research purposes. The quantitative data were analyzed through the paired sample t-test.

Table 1: Pre-Test and Post-Test Scores

<table>
<thead>
<tr>
<th>No. of Students</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>No. of Students</th>
<th>Pre-Test</th>
<th>Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st student</td>
<td>25</td>
<td>40</td>
<td>23rd student</td>
<td>36</td>
<td>56</td>
</tr>
<tr>
<td>2nd student</td>
<td>22</td>
<td>45</td>
<td>24th student</td>
<td>31</td>
<td>42</td>
</tr>
</tbody>
</table>

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Peer-review under responsibility of the Scientific & Review committee of SAN-2019.
Table 2 showed the mean score ($\mu$) of the pre-test was 28.69 and the standard deviation ($\sigma$) was 6.56. It can be seen that in the post-test the mean score of all students was higher after learning through the lessons. The mean score ($\mu$) of the post-test was 46.79 and the standard deviation ($\sigma$) was 6.95. Furthermore, the results of the pre-test revealed that there were 20 students who had the score below mean level which accounted for 46.51 percent. There were also 19 students who received the above level of mean score value that accounted for 41.3 percent. Besides, the results of post-test exhibited that there were 20 students who had the score below mean level. However, it can be seen that students have made good progress in their vocabulary learning through the lessons when looking at the pre-test score.

Table 3: The Maximum and Minimum Score of the Pre-Test and Post-Test

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>17</td>
<td>45</td>
</tr>
<tr>
<td>Post-test</td>
<td>32</td>
<td>56</td>
</tr>
</tbody>
</table>

Table 3 displayed the minimum scores of the pre-test was 17 while the minimum score of the post-test was 32. For the maximum score of the pre-test 45 whereas the maximum score of the post-test was 56. This can be supposed that after learning through the lessons, students have made progress in vocabulary learning.

Table 4: Students’ opinion on the reading English newspaper corpus-based lessons
<table>
<thead>
<tr>
<th>Items</th>
<th>X</th>
<th>S.D.</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The lessons is easy to employ and understand.</td>
<td>4.48</td>
<td>0.55</td>
<td>High</td>
</tr>
<tr>
<td>2. The lessons has a variety of learning activities.</td>
<td>4.22</td>
<td>0.45</td>
<td>High</td>
</tr>
<tr>
<td>3. The content is interesting.</td>
<td>4.44</td>
<td>0.65</td>
<td>High</td>
</tr>
<tr>
<td>4. The content fits your needs.</td>
<td>4.40</td>
<td>0.89</td>
<td>High</td>
</tr>
<tr>
<td>5. The content is suitable for your level of knowledge.</td>
<td>4.04</td>
<td>0.56</td>
<td>High</td>
</tr>
<tr>
<td>6. The presentation of content well-organized.</td>
<td>4.01</td>
<td>0.87</td>
<td>High</td>
</tr>
<tr>
<td>7. The content is explained clearly.</td>
<td>4.05</td>
<td>0.48</td>
<td>High</td>
</tr>
<tr>
<td>8. The direction of the lessons are clear.</td>
<td>4.38</td>
<td>0.58</td>
<td>High</td>
</tr>
<tr>
<td>9. The time to do each exercise is suitable.</td>
<td>4.14</td>
<td>0.66</td>
<td>High</td>
</tr>
<tr>
<td>10. The language used in each exercise is clear, the students can comprehend and do the activity correctly.</td>
<td>4.39</td>
<td>0.67</td>
<td>High</td>
</tr>
<tr>
<td>11. The difficulty level of the exercise is suitable for practicing.</td>
<td>4.41</td>
<td>0.89</td>
<td>High</td>
</tr>
<tr>
<td>12. The number of exercises is suitable for practicing.</td>
<td>4.45</td>
<td>0.54</td>
<td>High</td>
</tr>
<tr>
<td>13. The number of 10 target words words in each exercise is sufficient.</td>
<td>4.48</td>
<td>0.59</td>
<td>High</td>
</tr>
<tr>
<td>14. All exercises are enough to make students comprehend the meaning of the words precisely.</td>
<td>4.29</td>
<td>0.41</td>
<td>High</td>
</tr>
<tr>
<td>15. The types of exercises used in the lessons are various styles and interesting.</td>
<td>4.11</td>
<td>0.66</td>
<td>High</td>
</tr>
</tbody>
</table>

As shown in Table 4, student’s opinion on the reading English newspaper corpus-based lessons was satisfied at high level with the mean score of 4.29. According to the results, it can be seen that the students felt the content of the lessons are interesting, fit their needs, and suitable with their knowledge with the mean score (X̄) = 4.44, 4.40, and 4.04 respectively.
Table 5: Students’ Opinion After Using the Lessons

<table>
<thead>
<tr>
<th>Items</th>
<th>X</th>
<th>S.D.</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The lessons support me to improve my vocabulary knowledge.</td>
<td>4.39</td>
<td>0.59</td>
<td>High</td>
</tr>
<tr>
<td>2. The lessons develop my skill of guessing word meaning from context clues.</td>
<td>4.33</td>
<td>0.57</td>
<td>High</td>
</tr>
<tr>
<td>3. The lessons encourage me to remember the target words.</td>
<td>4.29</td>
<td>0.48</td>
<td>High</td>
</tr>
<tr>
<td>4. The lessons provide me to comprehend the meaning of the target words.</td>
<td>4.39</td>
<td>0.52</td>
<td>High</td>
</tr>
<tr>
<td>5. The lessons make me ready to use the target words in contexts.</td>
<td>4.21</td>
<td>0.85</td>
<td>High</td>
</tr>
<tr>
<td>6. The lessons provide me to learn the words appearing in our everyday life.</td>
<td>4.06</td>
<td>0.78</td>
<td>High</td>
</tr>
<tr>
<td>7. The lessons help me to be able to employ the target words accurately.</td>
<td>4.28</td>
<td>0.56</td>
<td>High</td>
</tr>
<tr>
<td>8. The exercises contained in the lessons help me to develop my vocabulary knowledge.</td>
<td>4.24</td>
<td>0.63</td>
<td>High</td>
</tr>
<tr>
<td>9. The matching, gap filling, and word association exercises help me to improve vocabulary knowledge.</td>
<td>4.47</td>
<td>0.60</td>
<td>High</td>
</tr>
<tr>
<td>10. The matching, gap filling, and word association exercises help me to understand the meanings of words.</td>
<td>4.45</td>
<td>0.59</td>
<td>High</td>
</tr>
<tr>
<td>11. The matching, gap filling, and word association exercises make me ready to use the target words in contexts.</td>
<td>4.33</td>
<td>0.88</td>
<td>High</td>
</tr>
<tr>
<td>12. The matching, gap filling, and word association exercises support me to develop my vocabulary knowledge for reading.</td>
<td>4.48</td>
<td>0.95</td>
<td>High</td>
</tr>
<tr>
<td>13. The lessons motivate me to realize the needs of learning the target words to improve my vocabulary knowledge.</td>
<td>4.45</td>
<td>0.84</td>
<td>High</td>
</tr>
<tr>
<td>14. The lessons help me to upgrade my vocabulary knowledge by myself.</td>
<td>4.36</td>
<td>0.72</td>
<td>High</td>
</tr>
<tr>
<td>15. After learning through the lessons, I can recognize the target words better.</td>
<td>4.28</td>
<td>0.54</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>4.33</td>
<td>0.85</td>
<td>High</td>
</tr>
</tbody>
</table>
Table 5 displayed student’s opinion after using the lessons that they felt it is a useful material as their opinion with the mean score of 4.33 at high level. It can be said that students accepted the vocabulary exercises contained in the lessons help them to improve their vocabulary knowledge. Further, the students revealed that the lessons motivated them to learn and provide a confidence to develop their vocabulary knowledge.

Conclusion

The current study was carried out with the following purposes: 1) to develop the reading English newspaper corpus-based lessons for EFL students and 2) to determine the effectiveness of the reading English newspaper corpus-based lessons. The two purposes were posed and the answers to these purposes are given as follows.

Research Purpose 1: To develop the reading English newspaper corpus-based materials for EFL students

To accomplish this purpose, we gathered 422 news articles from online version of the Nation Newspaper which is one of popular newspaper in Thailand during April 1st to April 30th, 2018. We collected the online news articles from the general, business, and sports section then saved them into “Microsoft Word”. Before the “WordSmith Tools Version 6” was used to classify the most frequent words and key words of English Newspaper Corpus (ENC), all files were converted into the plain text (*.txt) in order to make the analyzing program effectively. The concordancing software “WordSmith Tools Version 6” was applied. This concordancing software was used to see how words behave in texts. It was used in order to make the word frequency lists of news articles files by using the Wordlists Tool that offered both alphabetical and frequency order of the words in the texts files. The total corpus was 198,742 tokens or running words and the number of word types was 20,845. From the analysis of the study, the top 50 most frequently occurring words of the English Newspaper Corpus (ENC) was obtained. Thereafter, the reading English newspaper lessons that consisted of six activities, were constructed. These activities composed of 50 words to be mastered and each lesson comprised 10 words. The six activities were Word Learning, Try It Out, Noticing Words, Retrieval Practice, Practicing, and Vocabulary Test. These lessons of the reading English newspaper corpus-based lessons were used by the 43 students for a period of 10 weeks.

Research Purpose 2: To determine the effectiveness of the reading English newspaper corpus-based materials

In order to determine the effectiveness of the English reading lessons, the pre-test and post-test were carried out. The pre-test and post-test were divided into two parts that are multiple choices and translation test. The multiple choices part contained 30 multiple-choice questions with four alternatives. When they make multiple answers, they will receive one point for every correct answer and receive zero point for every wrong answer. The second part is translation part comprised of 30 items which was designed by incidentally choosing 30 out of 50 target words that students have learnt in the lessons.

The results revealed that the post-test mean score (µ) was increased which confirmed that the constructed lessons did support the 43 students to develop their vocabulary knowledge. The results also displayed that students can perceive the words, comprehend the meaning, and apply the words properly with the contexts. This can be concluded that the vocabulary exercises that designed for the lessons could help the students to enhance their vocabulary knowledge and help them to recognize the meaning of the target words. Additionally, it can be assumed that students could learn new words approximately 5 to 10 words each time and the number of times that words appear around 7 to 10 times could help them to recognize the words well.

Moreover, the students’ opinion revealed that they satisfied the reading English newspaper corpus-based lessons at high level and after learning through the lessons they felt that it is a useful material helps them improve their vocabulary knowledge at the high level.
Recommendations for Further Research

As summarized earlier, there are some recommendations for the further research related to this, described as follows:

a) The further study could be more accurate with collecting a much larger corpus. In addition, other resources of news corpora should be covered to see the broad intensity of linguistic features of news articles. In the current study, the online newspapers were used as an important input for the corpus, hence in order to examine the various linguistics in reading, other authentic texts such as textbooks, magazines, articles and journals should be regard as an input for the corpus study.

b) In the current study, the reading English newspaper corpus-based materials were designed for English major students at Rajamangala University of Technology Isan thus the further study could be used on a great scale of learners both English major and other fields of study who need to increase and develop their vocabulary knowledge in other universities or institutions in Thailand.

c) The current study was restricted to 43 EFL students who are at the intermediate level at a university then it could be duplicated with more students in order to make a determination whether the results drawn from the current study are related. 

d) The reading English newspaper corpus-based materials of this study investigated with only proficiency level (intermediate) thus the further study could be studied the effectiveness of corpus-based vocabulary activities on students with lower or higher proficiency levels such as elementary, pre-intermediate or higher that could be useful to get more understanding about the effectiveness of these materials.

e) In this study, the corpus-based materials used only content words in order to develop the lessons; therefore, the further study should be studied both function words and content words.

References


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The Lessons from Cultural Theory for Managers of International Joint Ventures

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RMIT University

Abstract

International Joint Ventures bring a range of potential business benefits but evidence from around the globe points to a high failure rate. Differences in national cultures are often cited as one of the reasons for this. The objective of this paper is to propose cultural theories which may help managers understand the role of national culture in cross-cultural co-operations. In this way, theoretical concepts can be linked to management practice. The paper introduces four leading cultural theories: Hofstede’s cultural dimensions, Ralston and colleagues’ work on crossvergence, the concept of cultural intelligence as applied by Soon Ang and Linn Van Dyne, and Lücke and colleagues’ work on cognitive multiculturalism. In each case the main tenets of each theory are explained and the link to practice is proposed. A thorough examination of each theory is not achievable within the space constraints; however, the paper is aimed at serving as a brief introduction and a stimulant to further reading on cultural theory and reflection on practice.

Keywords— Culture, Theory, International Joint Ventures, Crossvergence, Cultural Intelligence

Introduction

Cultural multiplicity is a firmly established feature of the 21st century, something that certainly holds true in the business sphere. One example of this emerging feature is the increasing number of international joint ventures (IJVs) though while there are more of them they also have a high rate of failure. Studies have reported failure rates of between 37% and 70% (Cullen et al., 1995; 2000; Hennart et al., 1998; Pak et al., 2009; Park & Ungson, 1997; Parkhe, 1993; Pothukuchi et al., 2002; Yehezkel et al., 2004). The purpose of this paper is to explore the relationship between cultural theory and management practice in international joint ventures (IJV). Four theories have been selected for discussion: Hofstede’s work on cultural dimensions, the theory of crossvergence proposed by Ralston and others, the concept of cultural intelligence, and the recently proposed theory of cognitive multiculturalism of Lücke and colleagues. The significance of highlighting cultural theories in the context of international joint ventures is that national culture, specifically the differences between nations, is understood to potentially cause major problems to cooperation, integration and trust development (Barkema & Vermeulen, 1997; Hogg and Terry, 2000; Vaara, 2003). This paper is aimed at offering a brief discussion of four cultural theories as an encouragement to delve deeper into what lessons can be applied to management practice and for business researchers it offers a reminder of how theory development takes place in the real world.

Hofstede’s Cultural Dimensions

Perhaps the best known cultural theory is that proposed by Hofstede and others and normally referred to as the theory of cultural dimensions. Hofstede first introduced his cultural dimensions theory as a result of his analysis of a vast values dataset collected by surveying international cohorts of IBM employees located in more than 50 countries. More than 100,000 questionnaires were used. The breakthrough was that correlation patterns emerged from the data at a country level. The result was the original 4-D model in which a dimension is defined as “an aspect of a culture that can be measured relative to other cultures” (Hofstede, 2011, p.7). The four dimensions were labelled as individualism-collectivism; uncertainty avoidance; power distance and masculinity-femininity (Hofstede, 1980). Later, in the 1980s, as a result of further research by Michael Bond, a Canadian psychologist, a fifth dimension – Long-term-short-term orientation – was added (Hofstede & Bond, 1988). Bulgarian scholar, Michael Minkov made a significant contribution to the model, which resulted in a refined way of calculating the fifth dimension and the addition of a sixth – Indulgence-Restraint. Space constrains discussion of all six dimensions, so for the purposes of this paper just one will act as an example – Individualist-Collectivist.

The terms collectivist and individualist long predate Hofstede’s work. The cultural theorist adopted them to express a society’s expectations of a person’s responsibilities within that society. In a collectivist society the expectation is for lifelong strong bonds between individuals of the same in-group. These in-groups can be variously the extended family, the community or the tribe (Hofstede, 2014). The expectation in an individualist society is that
the individual has responsibilities only to themselves and their immediate family beyond this the bonds between people are loose. It does not follow, however, that collectivist societies are inclusive. Indeed, such societies make a sharp distinction between individuals in their in-group and those others who are excluded as being part of an out-group. Competition occurs at an individual level in and individualist society but at a group level in a collectivist one (Hofstede, 2014). Also, important for the IJV context are the contrasting approaches to tasks. In collectivist societies the task itself is subordinated to the relationship(s) involved; in an individualist society the task comes first and the relationship(s) between the parties involved is secondary (Hofstede, 2014). A third area highlighted by Hofstede and significant for IJV management is communication where the difference is between high and low context forms. Collectivist societies feature high context communication in which many things are obvious or ‘go without saying’. In contrast, communication in individualist societies is low context and therefore takes longer as every detail needs specific agreement.

Hofstede declared culture to be “collective programming of the mind” (Hofstede, 1991, p. 5) but what happens when one part of management or workforce are ‘collectively programmed’ with one set of values and another part with a completely different set? Well, unsurprisingly the answer is often unmatched expectations, low trust, poor communication and conflict (Barkema & Vermeulen, 1997; Child & Markocz, 1993; Li et al., 2001; Peng & Shenkar, 2002; Poethukitchi et al., 2002).

Crossvergence

The third theory for discussion is that of crossvergence, most readily associated with the work of Ralston and colleagues from their initial paper published in 1993 (Ralston et al., 1993). The original paper came at a time when there was already academic interest in the study of convergence and divergence of managerial values in the context of globalization (Beres & Portwood 1981; Child, 1981; Hofstede 1983; Ricks et al. 1990). Convergence was associated with the dominance of Western business culture, while divergence was normally represented by Eastern societal values. The question being addressed was whether managerial values and resulting practices were becoming more uniformed or whether cultural differences were causing these values and practices to diverge. The answer would help us understand the relative strengths of national culture or business environment in shaping behaviour. The concept of crossvergence represented a ‘third way’, a process through which new hybrid sets of values can form over time which draws from more than one established values set, in this case it was Hong Kong managers displaying a mix of traditional Eastern values alongside those viewed as Western (Ralston et al., 1993). Reflecting on the development of the construct in 2008, Ralston explained that “Crossvergence … provides for the synergistic interaction of business ideology and sociocultural influences” (2008, p.36) which forms a new unique set of values. As the body of empirical work grew, Ralston proposed a new typology of crossvergence to reflect the differing types of values formation these studies were revealing. Firstly, conforming crossvergence describes the situation in which individual-level differences in values across groups reduce over time. Secondly, static convergence is found where values across groups can alter over time but the values difference relationship between these groups stays unchanged. Thirdly, deviating crossvergence refers to the situation where values differences across groups increase over time. In this scenario, either one group’s values are moving away from the other group or both groups values move away concurrently (Ralston, 2008).

Crossvergence is clearly an evolving concept but from the proliferation of studies using this theoretical framework and by looking at the specific implications for each country, managers can obtain some useful insights. The crossvergence concept is potentially significant for IJV managers because IJVs often feature multicultural management where such a process of values change could feasibly take place. The application of the construct can only be in comparative situations where definable groups exist, with these groups normally being based on national cultural background. Since the initial paper, convergence studies have mainly sought to compare Western and Eastern cultures (commonly, the U.S. with China, Japan, Hong Kong, and Taiwan). However, the number of countries studied continues to expand and now includes countries as diverse as Indonesia (Heuer et al., 1997), Russia (Ralston et al., 2018) Ghana (Yalley and Agyapong, 2017) Canada (Dunn and Shome, 2009), Israel, India and Pakistani (Khijili et al., 2010), Thailand (Fisher et al., 2004) and Korea (Froese, 2013).

Cultural Intelligence

Cross-cultural IJVs are certainly challenging but can succeed. The second theory I consider may point to a possible remedy for some of the inherent difficulties – cultural intelligence (abbreviated as CQ). Some people perform better in changed cultural contexts than others, cultural intelligence is a theoretical construct aimed at explaining why. The initial proposers of the concept designed it as a means of measuring CQ on a scale through the

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collection of test data, in the same way IQ is measured (Earley and Ang, 2003). In the business sphere the concept has achieved considerable popularity not least because cross-cultural business dealings have become so common.

Individuals assigned to a novel culture, as many are for IJVs, are faced with an entirely new set of behaviours to interpret. Gone are the shared reference points and predictability of actions that smooth interactions in a familiar cultural context. Social or cognitive intelligence that equips an individual sufficiently well in their home culture will not suffice in unfamiliar surroundings (Earley & Ang, 2003); this is where CQ is needed. With low CQ it is difficult to make accurate interpretations of the behaviour and signals from people of other cultures. Misinterpretation can cause misunderstandings and even conflict. To understand the implications for IJVs and other cross-cultural business settings we can consider the words of CQ theorists Earley and Mosakowski (2004, p.1) “The human actions, gestures and speech patterns a person encounters in a foreign business setting are subject to [a wide range] of interpretations including ones that can make misunderstandings likely and cooperation impossible.” With cooperation essential to a successful IJV, managers would benefit greatly from high CQ.

With CQ now such a widely-valued commodity it is natural to ask the nature or nurture question. Can CQ be acquired? Tan and Chua (2003) answer that while for general intelligence it is widely accepted that both genetic and environmental factors interact, for CQ there is a greater scope for knowledge development and experiential learning, a finding which supports the practice of cross-cultural training (Black & Mendenhall, 1990). Another question one may well ask is, how do I get this much needed form of intelligence? Tan and Chua (2003) argue that three components need to be in place. First is a cognitive ability to make sense of cultural cues and construct cultural schema. Second is possession of the drive and motivation to adapt to the unfamiliar setting. Third is the ability to reproduce culturally appropriate behaviours. With all three components in place the conditions are met for CQ to increase.

Cognitive Multiculturalism

In some ways our fourth theory, cognitive multiculturalism (CM), is an advanced form of CQ. Where CQ is an ability to switch between cultural interpretations of observed behaviour, cognitive multiculturalism occurs where the individual has actually internalized multiple sets of cultural values and behaviours and identifies with multiple cultures. Culture can be cognitively embedded and culture itself is described as “internalized mental representations fundamental to everyday interpretation, understanding, communication, and overall functioning in society” (Lücke et al., 2014, p.170). Individuals undergo a process of cultural learning. It is not a uniform process as cultural experiences vary according to their intensity and number of foreign cultures the individual is exposed to (Lücke et al., 2014). Once learned cultural interpretation occurs in an increasingly automatic and subconscious way. Lücke and colleagues propose five types of CM which each apply a different set of abilities and task effectiveness in the context of a multinational corporation. The potential utility of this typology is that managers can be matched with tasks for which they are best suited based on an analysis of their form of CM.

As with cultural intelligence, CM has positive benefits for firms operating internationally. For multinational businesses, these individuals can be valuable in helping them operate across borders and cultures (Hong & Doz, 2013). For example, in relation to an IJV one role could be to bridge the gap created by cultural distance (Fitzsimmons et al., 2011). When an organisation’s concepts, messaging and practices cross cultural boundaries they are reinterpreted in a way which may lead to disruption and misinterpretation. A multicultural manager would be able to reframe and modify an organisation’s messages in a way that kept the original essence but would be conveyed in terms familiar to the host country (Lücke et al., 2014). Furthermore, as IJVs invariably involve some form of knowledge transfer, it is clearly important to consider the cultural abilities of the key actors in this transfer. IJV managers will be tasked not just with ensuring the information is interpreted correctly but also with using the ability to understand, engage, and motivate the recipients (Lücke et al., 2014).

As with CQ the question arises of how cognitive multiculturalism develops. For Lücke and colleagues (2014) individuals undergo a process of cultural learning. It is not a uniform process as cultural experiences vary according to their intensity and number of foreign cultures the individual is exposed to (Lücke et al., 2014). However, they do not rule out a role for personality predispositions and individual cognitive abilities.

Conclusion

It has been said that theories look great until they encounter reality (Goodrich, 2015). This scepticism overlooks that good theory is underpinned by empirical studies which represent investigations of the real world. This paper set
out to offer a brief introduction to some of the cultural theories that can help management be more effective in contexts. It is hoped that it will stimulate further interest in how these theories can be used to understand the challenges opportunity brings when these opportunities involve cross-cultural interactions.

References


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Use Intention of Thai Internal Audit towards Data Analytics tools
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Abstract

This paper studies the use and intention to use of data analytics tools of the Thai internal auditor where the knowledge about the current situation of information technology use in internal audit tasks, characteristics of use and intention to use are limited. Questionnaire surveys via offline and online channels were used to access the data from Thai internal auditors and there was a total of 260 participants. This study adopted four constructs from Unified Theory of Acceptance and Use of Technology Model (UTAUT): Performance Expectancy, Effort Expectancy and Social Influence to explain and predict Use Intention of Thai internal auditors towards data analysis tools. The data was analyzed with descriptive analysis and the Structural Equation Model (SEM). The study found that most of the respondents are female master’s degree holders, one third of respondents has less than five years’ experience in internal audit work and most of them are auditing in within the service industry. Thai internal auditors adopted data analytic tools in various types where majority of respondents used Spreadsheet software to perform management and information technology audit activities at the initial stage in unpredictable performance based on individual competence and not on repeatable processes. Regarding the factors use to predict use intention of internal auditors toward using data analytic tools, the statistics result show that Performance Expectancy and Effort Expectancy were found to be not significant determinant the Behavior Intention, but Social Influence factor seem to be the main factor affecting the use intention to use data analytics tools of Thai internal auditors.

Keywords— Data analytic tools, Internal Auditors, Thai large organizations, UTAUT

Introduction

The increasing roles of innovation and digital networks as the main drivers of business practices have led to the creation of new forms of businesses, replacing some conventional businesses. The industrial 4.0 with intensive information technologies and information systems adoptions results in huge amount of business data from a variety of sources creating and resting in organization data storages. This phenomenon impacts on both management operations and controls from document tracing to applications’ log analysis (Dai and Vasarhelyi 2016). In a large organization, internal audit function is staffed with internal auditors, professional people responsible for providing independent reports about objective evaluations of a company’s financial, business operational efficiencies and corporate governance to the board of directors, the board of trustees, the accounting officer or the audit committee on how to improve the overall structure and practices of the company. They generally advise management on control effectiveness, change initiatives, enhancements to risk management related to the three lines of defense and other matters – including business effectiveness and efficiency falls well within the Internal Auditor’s role and stakeholders’ expectations.

The impact of intensive business data leads to the Internal Auditor’s function and auditors need to leverage with data and processes based on new technologies handling a large amount of real-time audit-related data, automate repetitive processes involving few or simple judgments, and eventually achieve comprehensive, timely, and accurate assurance (Krahel and Titera 2015). To perform the internal audit tasks, internal auditors must evaluate the accuracy of controls at business unit levels and recommend improvement; evaluate links among those business units; verify physical assets and make sure they are protected; ensuring compliance with established business procedures of the firm; and investigating internal fraud or behavior in violation of company policy. One of general competencies of the internal auditor’s requirement is IT/ICT frameworks, tools, and techniques (Bailey 2010, Joseph F. Hair, Black et al. 2010).

There is suggestion from the internal audit professional to encourage internal auditor to have skill and use of data analytic tools in their auditing (Jordan, Rose et al. 2017). However, the present knowledge about the current situation of information technology use in Thai internal audit activities and the characteristics of use in Thai organizations are limited, not many studies had been performed. Therefore, this study intends to explore the current situation of information system and data in Thai organizations, the current practice of Thai internal auditors as well as explaining...
the behavioral factors affecting Thai internal auditors in using data analytic tools to perform their audit task based in the Unified Theory of Acceptance and Use of Technology Model: (UTAUT).

Research Model and Hypothesis

Data analytic tools

Data analytic tools refers to applications or software can perform qualitative and quantitative techniques and manage data and process used data to identify and analyze behavioral data and patterns, and techniques vary according to individual company requirements to enhance productivity and business gain. In addition, data analytics is a process in which insights are extracted from operational, financial, and other forms of electronic data that are internal or external to the company (Dastrup 2016). Daj and Vararhelyi (2016) had classified the use of data analytic tools into four generation as followed. The first generation of audits or the traditional manual audits (Audit 1.0) were the birth model of internal audits and was founded by the Institute of Internal Auditors (IIA) in 1941, where audit procedures were carried out using pencils and calculators. Then the field moved forward to Internal Audit 2.0 by the force of Sarbanes Oxley Act in 1992 that improved capabilities such as IT internal audit and data analytics like spreadsheet software like excel and CAAT software (Computer Aided Audit Software). In the third generation, there emerged disrupting technologies which were introduced to the business environment since 2002. Internal Audit 3.0 included big data in audit analytics with data analytics application tools. Internal auditors began to leverage data analytics as a primary tool for aligning risk with strategy, enhancing performance, driving insights, and reducing the cost of compliance. Similarly, Industry 4.0. Audit 4.0 relies on those six principles to increase data availability, enable continuous data monitoring and validation, and improve the automation of audit procedures. Audit 4.0 will significantly change the auditing profession by automating current procedures, enlarging their scope, reducing timing, and eventually improve the overall assurance quality. This section illustrates the impacts of Audit 4.0 on the auditing profession from four perspectives: standards, principles, technology, and auditors to deal with semi- and progressive automation of audit tools like sensor, Cyber Physical Systems (CPS), IoT (Internet of Things) /Internet of Services (IoS), Radio Frequency Identification (RFID) and Geographical Positioning System (GPS). In this study data analytic tools were categories in to 3 categories which are spreadsheet software, General Audit Software: GAS such as ACL, IDEA and Other data analytic tools e.g. SAS, SPSS, R, and Apache Hadoop (The Chartered Institute of Internal Auditors, 2017).

The stage of maturity of internal audit analytics used

Deloitte Touche Tohmatsu Limited, one of Big-4 leading large incorporated audit professionals suggest the five states of data analytics used in internal audit. These are Initial state in which there are no or limited capabilities to use data analytics, ad-hoc activities resulting in unpredictable performance where success of use data analytics is based on individual competence and not on repeatable processes (Lloyd and Singh 2016). Developing state, the organization exhibited a basic set of capabilities in which the processes used are rudimentary and loosely woven and where the success is repeatable with similar application and scope, but not consistent across the organization. Defined State, capabilities are developed and adopted consistently and used to drive some audit activities where management defines goals and objectives for standardized processes and confirms they are communicated. In what is termed the Advanced State, capability is well developed and practiced with appropriate governance. Processes and practices are routinely analyzed for effectiveness and efficiency. In the Leading State capabilities are well defined and institutionalized and the department has differentiated itself based on its capabilities. Continuous improvement is used to adapt to future changes.

The research models

Technology acceptance model is one of the most popular in the information technology research field to understand the factors affecting information technology users’ acceptance behavior towards new technology. Study of Venkatesh, Morris, Davis and Davis (2003) combined eight models and theories (Theory of reasoned action (TRA), Technology Acceptance Model (TAM) and Extended TAM (TAM2), MM, Theory of planned behavior (TPB), Combined TAM and TPB (C-TAM-TPB), Model of Personal Computing (PC) utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT) to construct the UTAUT model. Each of the constructs mentioned in IDT, TRA, TAM, TPB, C-TAM-TPB, MPCU, MM, and SCT pertained to unify an acceptance and use of technological theories main constructs and measurement items. They suggested that main purpose of UTAUT was to integrate the fragmented theory and research on individual acceptance of information technology into a unified theoretical model (Venkatesh et al., 2003). The UTAUT and modified UTAUT are widely adopted as research models to study intention and use of technology in various domain of studies e.g. education, banking, commerce with different
technology and groups of users in various demographics. The full and modified model of UTAUT are widely adopted as research models in various domain of studies e.g. digital library, English E-learning system, electronic placement test system with different technology user groups in various demographic (Rahman, Jamaludin, & Mahmud, 2011; Tan, 2013; Marchewka, Liu, & Kostiwa, 2007; Sriwidharmanely & Sysfrudin, 2012) In this study, part of modified UTAUT is adopted to investigate factors influencing the intention of internal to use of data analytic tools in their audit activities. The 3 constructs of UTAUT suggest having positive influence on Behavior Intention of technology users were adopted Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) as a model of study and analysis.

![UTAUT model](image)

Figure 1 UTAUT model, adapted from Venkatesh et al. (2003)

**The definition of the core constructs**

Performance Expectancy (PE) is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance.

Effort Expectancy (EE) is defined as the degree of ease associated with the use of the system.

Social Influence (SI) is defined as the degree to which an individual perceives that it is important others believe he or she should use the new system.

**Hypothesis**

H₁: Performance Expectancy positively affects Behavior Intentions to Use data analytic tools of Thai internal auditors.

H₂: Effort Expectancy positively affects Behavior Intentions to Use data analytic tools of the Thai internal auditors.

H₃: Social Influence positively affects Behavior Intentions to Use data analytic tools of the Thai internal auditors.

**Methodology**

The research methodology using in this study is a survey research. Survey instrument of this research is a self-administered online questionnaire. The research instrument adopted constructs from UTAUT model and adapted measures of each construct from Venkatesh et al. (2003) with 5-point Likert-type scale: 1 = strongly disagree and 5 = strongly agree. A list of validated items for each construct is provided in Appendix A.

**Research Instrument**

Survey research is used in this study. The research instrument of this study is a self-administered in paper-based and online questionnaire forms, as a tool to collect data regarding use of data analytics tools among Thai large firm internal auditors. Both questionnaires contained three parts of survey questions. In the first part demographic data of the participants are required. In the second part questions are related with internal audit task. Last, the items of each UTAUT constructs was asked.

The research instrument adapted constructs from UTAUT model and adapted measures of each construct from Venkatesh et al. (2003) with 5-point Likert-type scale: 1 = strongly disagree and 5 = strongly agree. A list of validated items for each construct is provided in Appendix A. As all measure are available in English, they were translated into Thai by a lecturer bilingual in Thai and English who teaches Management in the Information System and Education field. Then, a Thai lecturer from the English department in University Language Institution translated the Thai version back to English. The original English version of measures and retranslated English version were compared to recheck the same meaning of each measure by an English native speaker employed by University Language institution. To validate the survey measures; the first draft Thai questionnaire was pre-tested by forty undergraduate students in...
business school. After reviewing and testing the first draft questionnaire, it was tested again with another group of thirty internal auditors working of 10 large universities.

Sampling and Data Collection

The population of this study is Thai internal auditor that regularly works in Stock Exchange of Thailand listed companies and large organizations, but the population of Thai internal auditor is unknown. Therefore, the sample of this study was based on the Purposive Selection. The Data collections were performed during December 2017 to May 2018 in several channels. The first channel was the 400 survey packages, (Each package contained 5 copies of survey questionnaires) and were distributed to Human Resource department manager of 400 listed companies in Security Exchange of Thailand; 76 questionnaires were returned by February 2018. Second channel, the online questionnaire shortened URL link to Google form were distributed to internal auditor’s social network communities on Facebook CIA Coach Consulting Co., Ltd. by Coach Meng page of 1,764 Facebook members and Institute of Internal Auditors Thailand official page, and Line chat CIA coaching consulting with 301 active members resulting 154 participants. The third channel was that the printed questionnaires were distributed to internal auditors who had participated in 2 public internal audit training courses of Thailand Federation of Accountant Professional and 30 respondents from public training events of Thailand participated in this survey. Overall, there are 260 participants in this study.

Data Analysis

Data analysis methods used in this study are descriptive analysis and the two-approach recommended by Anderson and Gerbing (1988), the measurement by confirmatory factor analysis (CFA) and the structure equation modeling (SEM) was then estimated for hypothesis testing.

Both measurement model and the structural model were assumed using the maximum likelihood method with AMOS. To evaluate the fit of the model, the comparative factor index (CFI), the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the normal fit index (NFI) and root mean square error of approximation (RMSEA) were assessed in addition to chi-square test. In general, model fit is adequate if the value of GFI, NFI, TLI and CFI larger than 0.9, AGFI larger than 0.8 and RMSEA smaller than 0.08 (Anderson and Gerbing (1988) Hair, 2013)

Research Findings

Table 1: Descriptive data analysis on demographic of respondents

<table>
<thead>
<tr>
<th>Gender (N = 260)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>30.4</td>
</tr>
<tr>
<td>Female</td>
<td>69.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Range (N = 260)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 to 30 years old</td>
<td>23.2</td>
</tr>
<tr>
<td>31 to 40 years old</td>
<td>35.4</td>
</tr>
<tr>
<td>41 to 50 years old</td>
<td>21.4</td>
</tr>
<tr>
<td>51 to 60 years old</td>
<td>20.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education (N = 260)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor or below</td>
<td>40.0</td>
</tr>
<tr>
<td>Master</td>
<td>49.3</td>
</tr>
<tr>
<td>Above Master</td>
<td>10.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year of Work Experience (N = 260)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>35.7</td>
</tr>
<tr>
<td>5 to 10 years</td>
<td>22.1</td>
</tr>
<tr>
<td>11 to 15 years</td>
<td>14.3</td>
</tr>
<tr>
<td>More than 13 years</td>
<td>27.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry (N = 260)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail and Wholesales</td>
<td>22.9</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>36.8</td>
</tr>
<tr>
<td>Service</td>
<td>40.4</td>
</tr>
</tbody>
</table>
The data of the study were entered to SPSS 17.0 for further statistical analysis. In all analyses, a 0.05 significance level was used.

**Descriptive Statistics:**

In Table 1, the 260 data sets were collected from Thai internal auditors working in the large Thai organization, 69.6% female, and 30.4 % male. Majority of the respondents at 35.4 percent were between 31-40 years old. Most got master’s degree in their education background (49.3%) and bachelor’s degree (39.3%). About one third of them (35.7%) have less than five years’ experience in internal audit work and 27.9% had work experience in internal audit field more than 15 years. Most of the internal auditors participated in this study are working in service industry (40.4%) and 36.8% in manufacturing and 22.9% in retail and wholesale.

The current data analytic tools Thai internal auditors adopted in their audit activity are a common spreadsheet software e.g. Microsoft Excel (85%), General Audit Software: GAS e.g. ACL and Ideal application (28.1%) and Other data analytic tools such as SAS, SPSS, ERP Audit integrated module, R and Hadoop (37.7%). Regarding the 5 stages of using data analytic tools of in auditing activities, majority of Thai Internal auditors adopted data analytic tools at initial stage (40.8%) and 21.2% at developed stage, 12.7% at defined stage, 15.0% at managed stage and 10.4% at optimized stage. The data analytic tools were used mostly in Management audit and Information technology Audit (IT Audit) at 35.4%. Descriptive statistics for UTAUT items are presented in Table 2. The internal auditor response their attitude toward the data analytics by rating the 20 statement items of 6 constructs of this study constructed model on 5 Likert scales. Each construct was evaluated separately by examining the indicator loading for statistic significant and assessing the construct reliability and variance extracted (Anderson and Gerbing 1988).

**Table 2: Descriptive Statistics for External Variable**

<table>
<thead>
<tr>
<th>UTAUT item*</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectancy 1: PE1</td>
<td>260</td>
<td>1.00</td>
<td>5.00</td>
<td>3.6115</td>
<td>.74504</td>
</tr>
<tr>
<td>Performance Expectancy 2: PE2</td>
<td>260</td>
<td>2.00</td>
<td>5.00</td>
<td>3.9692</td>
<td>.69124</td>
</tr>
<tr>
<td>Performance Expectancy 3: PE3</td>
<td>260</td>
<td>2.00</td>
<td>5.00</td>
<td>3.8154</td>
<td>.72234</td>
</tr>
<tr>
<td>Performance Expectancy 4: PE4</td>
<td>260</td>
<td>2.00</td>
<td>5.00</td>
<td>3.9692</td>
<td>.65687</td>
</tr>
<tr>
<td>Average Performance Expectancy</td>
<td></td>
<td></td>
<td></td>
<td>3.8143</td>
<td>.56188</td>
</tr>
</tbody>
</table>

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As shown in Table 3 the Cronbach alpha value of each constructs are reported above 0.7 are high reliability and internal consistency among these different factors in the UTAUT model. Hence, the UTAUT model, which is built for this research, is suitable for this study.

### Table 3:
**Fit Index and value of items of each construct**

<table>
<thead>
<tr>
<th>Fit Index, Acceptance value</th>
<th>PE</th>
<th>EE</th>
<th>SI</th>
<th>The model</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$ Significant</td>
<td>6.214</td>
<td>2.006</td>
<td>2.874</td>
<td>63.143</td>
</tr>
<tr>
<td>$\chi^2$/df &lt; 3</td>
<td>2.113</td>
<td>1.003</td>
<td>1.437</td>
<td>1.018</td>
</tr>
<tr>
<td>P Value</td>
<td>0.121</td>
<td>0.205</td>
<td>0.111</td>
<td>0.436</td>
</tr>
<tr>
<td>GFI &gt; 0.90</td>
<td>0.992</td>
<td>0.996</td>
<td>0.994</td>
<td>0.964</td>
</tr>
<tr>
<td>AGFI&gt; 0.80</td>
<td>0.958</td>
<td>0.981</td>
<td>0.972</td>
<td>0.946</td>
</tr>
<tr>
<td>NFI &gt; 0.90</td>
<td>0.987</td>
<td>0.922</td>
<td>0.989</td>
<td>0.929</td>
</tr>
<tr>
<td>CFI &gt; 0.90</td>
<td>0.993</td>
<td>1.000</td>
<td>0.997</td>
<td>0.999</td>
</tr>
<tr>
<td>TLI &gt; 0.90</td>
<td>0.980</td>
<td>1.000</td>
<td>0.990</td>
<td>0.998</td>
</tr>
<tr>
<td>RMSEA &lt; 0.08</td>
<td>0.066</td>
<td>0.003</td>
<td>0.041</td>
<td>0.008</td>
</tr>
</tbody>
</table>

(*) Please refer to the items present on appendix A

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Exploratory Factor Analysis

Both the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) index and Bartlett’s Test of Sphericity determined the suitability of the data size for the factor analysis. The KMO measure of sample adequacy was 0.720, which was significantly above the threshold value of 0.7 (Field 2005) and the Bartlett Test of Sphericity resulted in an approximated $\chi^2$ of 1758.027 with 105 degrees of freedom ($p < .001$). Consequently, these results indicate that the data used in this study were sufficient for exploratory factor analysis (EFA) procedures.

Confirmatory factor Analysis (CFA)

CFA was undertaken following EFA to assess the fit of the research model.

Model and Hypothesis testing

To assess the model and hypothesis AMOS version 25 was used with the maximum likelihood method with AMOS. Given the multiple and interrelated dependence relationship among the constructs, the structural equation modeling techniques is appropriate. The overall fit of the model is accepted. The model Chi-square is 63.143, P value = 0.436. The ratio of chi-square to degrees of freedom ($\chi^2$/df) is 1.018, GFI= 0.964 indicating a good fit. The other index confirmed value of the measurement model are CFI=0.999, NFI=0.929, AGFI= 0.946, TLI=0.998 and RMSEA=0.008. To evaluate the fit of the model, the comparative factor index (CFI), the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the normal fit index (NFI) and root mean square error of approximation (RMSEA) were assessed in addition to chi-square test. In general, model fit is adequate value of ($\chi^2$/df larger than 1; GFI, NFI, TLI and CFI that larger than 0.9; AGFI larger than 0.80 and RMSEA smaller than 0.08 ((Anderson and Gerbing 1988, Hair 2013)

![Diagram](image)

**Figure 3: The research model result**

The test of the structural model includes estimates of the path coefficients, which indicate the strengths of the relationships between the dependent and independent variables. Figure 3 shows the results of the test of the research model. The paths specified in UTAUT show significant between Social Influence and Behavior Intention for 22% of the variable of Behavior Intention.

Table 4:

<table>
<thead>
<tr>
<th>Regression Weight</th>
<th>Estimate</th>
<th>S.E.</th>
<th>C.R.</th>
<th>Standardized P</th>
<th>Hypothesis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE → BI</td>
<td>0.125</td>
<td>0.112</td>
<td>1.123</td>
<td>0.262</td>
<td>H1</td>
<td>reject</td>
</tr>
</tbody>
</table>

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Table 4: shows the result of regression analysis was used to confirm the five hypotheses of this study as followed:

H₂: Performance Expectancy positively affects Behavior Intentions to Use data analytic tools of Thai internal auditors.

H₂: Effect Expectancy positively affects Behavior Intentions to Use data analytic tools of the Thai internal auditors.
To test H₂ and H₃, the standardized regression weight at 0.062 and -0.016 of Performance Expectancy and Effort Expectancy seem to have no significant direct relation to intention to use data analytics tools of internal auditors.

H₃: Social Influence positively affects Behavior Intentions to Use data analytic tools of the Thai internal auditors.
According to regression weight analysis result, Standardized Regression Weight = 0.125 and P value = 0.028 at the 0.05 level of confidential give support for H₃. This mean statistic confirms that Social Influence has positively affect Behavior Intentions to use data analytic tools of Thai internal auditors.

Conclusion and discussion
In this study, the main objective is to focus on the intention to use data analytics tools of Thai internal auditor and in their current internal audit tasks. The study found that majority of the respondents are female with master’s degree, one third of respondents have less than five years’ experience in internal audit work and most of them are auditing in the service industry. Thai internal auditors adopted data analytic tools in various types where majority of respondents used spreadsheet software to perform management and information technology audit activates at initial stage in unpredictable performance based on individual competence and not on repeatable processes which matching and still auditing in the audit environment and technology of the internal auditing 2.0 where the use of data analytic tools like spreadsheet software like excel and CAAT software for increase capacity of audit activities.

Regarding the factors used to predict use intention of internal auditors toward using data analytic tools, the statistics show that Performance Expectancy and Effort Expectancy were found to be not a significant determinant of Behavior Intention, but Social Influence factor seem to be the main factor affecting the use intention to use data analytics tools of Thai internal auditors. The findings of this study indicate a need of more cross-cultural evaluation of the UTAUT model especially in Thai culture with different technology especially in the professional use of technology.

Limitation
There are some limitations. First, the subject of this study, Thai internal auditors, are people working in the internal audit field that normally established in large organization such as SET listed company or government service. This leads to the unidentifiable population and the convenience sampling method created limitation to the generalizability of the results of the study. Second, perceptions and behavioral intentions were measured from internal audit currently adopted a kind of data analytics tools in their audit activities which might limit the generalizability of the results in that the sample by determining whether the respondents’ currently used data analytic tools. Third, the main objective of this study is focus on investigating the factors affecting the intention to use data analytic tools of Thai internal auditors; therefore, adopting 4 main constructs of UTAUT in this study leads to the estimated model is not the exact form as the original UTAUT model and as a result, the explained variance can be affected.

References

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The Importance Of Festivals In Destination Preferences Of Consumers: The Case Of Altınköy, Turkey

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Abstract

This study aims to reveal the effect of festivals held in Altınköy on tourism preferences of consumers. Within the scope of the research, firstly, consumer preferences, activity tourism and the effects of festivals are discussed theoretically. The area of application is limited to the residents of Altınköy district by taking into consideration the constraints of time, cost and accessibility. In the research, 60 interviewing consumers were interviewed face to face. The data obtained from the study were evaluated with the help of Nvivo 10.0 program by using qualitative research method. As a result of the findings, demographic characteristics of the consumers participating in the festival, travel purposes, perceptions about the festivals held in Altınköy were evaluated and some suggestions were made for the effective implementation of festivals.

Keywords— Consumer behavior, Event tourism, Altınköy

Introduction

Festivals are events of attraction for tourism regions. It is known that festivals, which can be defined as thematic folk days that celebrate the valuable aspects of community life, are designed to be made on specific and traditional days and dates. It also have social, economic, cultural and environmental impacts (Small, Edwards and Sheridan, 2005). The local community supports the event if the organization have positive social impacts (Delamer, 2001). Supported festivals by local people brings voluntary work as well. Within the scope of the research, festivals and their effects are discussed theoretically and the importance of festivals in the choice of destination is explained.

Conceptual Framework

Event tourism is generally accepted to include all planned events with an integrated approach to development and marketing (Getz, 2008). In addition, people who participate in an event with a primary motivation and who stay longer in the destination, allocates more budget, and who often travel in a group, are called event tourists (Tang ve Turco, 2001; Yoon et al., 2000). Many of the participants participate in activities for exchanging ideas, meeting people in different cultures, developing their knowledge and skills, and reinforcing their sense of self (Laing, 2018: 165).

Within the scope of local events; cultural celebrations (festivals, carnivals, commemorations, religious events), political and state activities (summits, royal celebrations, political events, VIP visits), arts and entertainment (concerts, award ceremonies); business and trade events (meetings, congresses, consumer and trade shows, fairs and markets), education and scientific events (conferences, seminars, symposiums); sports competitions (amateur, professional, audience, participant), recreation (sports or games for leisure); special events (weddings, parties, social events) are included (Getz, 2005: 404).

Local events are a periodic or one time event and a kind of activity that is associated with low tourist demand. Local events are periodic or one-time events, with low tourist demand. The festival includes festivals designed for entertainment and socialization, with priority in the development of the local community (De Bres ve Davis, 2001: 329). These festivals are intended to celebrate the life style of the region and the traditions and customs of the region (Dimmock ve Tiyce, 2001: 371).

Regional activities are short-term events that are held annually or periodically to increase the attractiveness and awareness of the region. Periodic events include mostly world exhibitions, unique carnival and festivals, major sporting events, important historical, cultural and religious issues (Ritchie, 1984: 2). Mega events usually include events such as Olympic games, world football championships and world cups (Allen vd., 2005: 29).

In the research, the festivals associated with event tourism, taking place in the Ankara / Altınköy Open Air Village Museum. The open-air village museum offers an original, old-town experience with its forest, park, lake, castle, chapel and tower, attracting the attention of many visitors. Altınköy open air village museum, bears the distinction of being the first open-air village museum in Turkey. Five of its own houses are used as accommodation establishments. In accordance with the traditions of the country, local people exhibit the village life together with the local clothes. The toy museum, consisting...
of village toys, operates as a children's activity house where children's games can be played. The survival of some lost occupations (blacksmith, tin, weaver, blacksmith, baker, village guard, etc.), and many art branches of the past (tile making, silk weaving, rosemary and knife making, lute stone processing, horn combs and torsion construction, mosaic, etc.) are various recreational activities offered to visitors in Altınköy Open Air Museum.

Figure 1. Altınköy Water Mill

Figure 2. Ankara Brands Activity

Figure 3. April 23 themed children's day

Figure 4. The Vintage Festival

In Anatolia, the vintage festival, which is celebrated with enthusiasm for symbolizing abundance for hundreds of thousands of years, and called “grapes became bride”, for being accepted as the wedding of the earth, is realized by the Altındağ Municipality in the Altınköy Open Air Museum. Traditional festivals in Altınköy Open Air Museum are; harvest festival, vineyard festival, Ankara brands event, traditional ashura festival, April 23 themed children's day, events in event shops in village square, generations meeting from tradition to future event and seedling inoculation. Also, for the purpose of introducing Ankara / Altınköy, Altınköy Open Air Museum took part in the international bread festival. From past to present...
wheat mowing, flour making in mill, making village bread, preparing sherbet, making boiler wheel, bulgur boiling, spine making, churning forging, making bulgur pilaf, making traditional tarhana, traditional art branches, folk dances, children's games and village rituals are some of the activities taking place in the Altınköy. Some of these activities are shown visually in figures 1-2-3 and 4.

Figure 5: Traditional Ashura Days

With the fires burned in the village square, traditional ashura days are celebrated every year. In addition, details of the tradition of ashura are also explained to the visitors in detail.

Methods

In this research, qualitative research techniques were used. Qualitative research covers data collection methods that enable researchers to make close contact with participants such as observation and interviewing (Lodico et al, 2010: 143). In this context, data were collected from written sources by literature analysis and observation. One of the important issues increasing the data value of the information collected in the qualitative studies is the dates of the study. In this context, field studies were carried out between August-November 2018 in Altınköy. Randomized method was used in the interview with the local people. In the research, the activities of the visitors in Altınköy, how they look at the subject and their knowledge and experiences on this subject are being investigated. The research consists of observational data obtained from field study. Semi-structured interview method was used to collect data and an interview form with open-ended questions was prepared. In the analysis of the data, QSR Nvivo 10.0 program, which is frequently used in qualitative research, was used. In the analysis of the data, QSR Nvivo 10.0 program, which is frequently used in qualitative research, was used. While analyzing the data, necessary simplification and conceptualizations have been made and some sentences and paragraphs related to the research questions have been separated and conceptualized according to their common characteristics in a general framework, and then the findings are arranged and defined according to thematic coding.

In order to measure the reliability of the qualitative questions, expert opinion was consulted in order to see whether the 45 metaphors (words) for the visitors to Altınköy represent the theme in which they were placed. In this respect, the metaphors obtained from the questionnaires and the list of themes created by the researcher were mapped so that no metaphor concept was excluded. The formula which is developed by Miles and Huberman (1994) is used for to measure the reliability of the study. Percentage of Reconciliation (P) = Consensus Union (Na) / (Consensus Association (Na) + Disagreement (Nd)) X 100. In qualitative studies, reliability is ensured in cases where the compliance between expert and researcher evaluations is 90% or more.

Findings and Results
A total of 60 people participated in the research. The study included 35 female and 25 male visitors. 8 of the women teachers, 3 housewives, 7 officers, 1 dentist, 9 retired, 7 students; 9 of the men are civil servants, 2 are teachers, 6 are retired and 8 are students. Their ages vary between 19 and 54 years of age.

Figure 6: Festival Types of Visitors in Altınköy Preferences

The information about which activities have been effective in preferring Altınköy visitors has been reported to be 79 in males and 85 in females. According to these opinions, it is seen that there are mostly Karagöz and Hacivat activities in males. It is seen that there are traditional ashura days performed in women every year. Women exhibitions, handicrafts, music festivals, naht art, children's games, traditional ashura days, Karagoz-Hacivat activity when reporting on the opinion, men exhibitions, crafts, music festivals, naht art, children's games, traditional ashura days, Karagoz-Hacivat reported their opinions on the construction of the ball.

Conclusion

The results of the research revealed that the visitors had a positive effect on the destination choices of Altınköy and Region Festivals. These festivals are believed to contribute to the district and to the local community. Furthermore, the people of the district believe that the festival is successful. Rich businessmen, tradesmen and local people also support the festival and participate in voluntary work.

The carrying capacity of the region for the protection of environment and natural resources while plans for the festival's development must be taken into consideration. The festivals should be shaped in accordance with the traditions and customs of the local people. It is possible for the festival to be successful with the local people, municipality and district governor working in coordination. When organizing the festival, the resources that will provide support should be organized well.
References

The Importance of Artificial Intelligence in Customer’s perceptions in services of Interactive Voice Recognition in the Banking Industry in Sri Lanka

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Abstract

This research was conducted in qualitative approach. The researcher has worked to develop a framework based on the concept of Artificial Intelligence (AI) to introduce a new model. On that purpose primary data was collected from hundred customers who enjoyed in services of Interactive Voice Recognition (IVR) in the Banking Industry in Sri Lanka based on interviews with an open-ended question. The researcher has coded the collected data to spot the patterns to identify and analyzed the core relationship in between AI and IVR to discuss and to revise the developed model. The samples are selected in accordance with the intention to extract relevant information and thus, the researcher has used nonprobability sampling because aimed to find respondents that had some experiences with any types of services in IVR. Data was analyzed by labeling them as “codes” and the researcher went through all the labels that were constructed in the previous stage, these were then categorized once more into themes. These themes and labels were then used to spot indications and patterns in the data that the researchers used when analyzing their primary data. The findings of this study suggest that customers are skeptical towards in Interactive Voice Recognition in telephone customer services and believe that the service quality would be lower than regular telephone service. The findings did however reflect that customers are willing to cope or adjust to new technology as long as there are alternatives them to be satisfied.

Introduction

It is important to mention that Artificial intelligence (AI) is everywhere nowadays. However, just accepting of AI is not enough because the structural failure of it from the businesses seem to be continue and the current path is not that much clear. Additionally, customers become confuse on AI behaviors that could harm the trusted personal as well as corporate relationships that drive and serve business. In contrary, Artificial Intelligence has jumped from mysterious situation to full squeeze scenarios with a speed and intensity that has caught even its supporters by surprise. Therefore, it has seen obviously that Artificial Intelligence is big, important and also transformative. As a result, services industries now cannot ignore AI at their safety. It has seen that employees in services industries keep on critically questioning that Artificial Intelligence is helping or harming, perhaps even replacing them. Eventually, AI may create problems without transparency, trust and personalization among stakeholders of service industries because, advanced components of AI may bring revenue for service industries where it takes deeply into the souls of stakeholders across the value chain and embrace a human-centric approach. AI has to implement with the creative, emotional and constructive capabilities of human beings with the speed, accuracy and scale of machine intelligence. And finally, many will accept AI is one of the dynamic mechanisms to promote and enhance services of industries. Therefore, Artificial Intelligence (AI) is one of the significant concept in the field of computer science that seeks to develop a method to program to perform actions and deduction similar limits to those of human intelligence. Therefore, it aims at understanding the complicated mental processes of human brain and then interpreting those mental processes to equivalent computer processes that increases the ability of the computer to solve sophisticated problems. Therefore, in most occasions that AI is using to strengthen service marketing in organizations through resource allocation, distribution and utilizing to meet specific and general requirements of customers. And also, to establish competitive advantage because it is vital to analyze customers’ demands and needs to offer blend services. Therefore, one of the
service marketing strategy is to introduce Interactive Voice Recognition (IVR) in the collaboration with the applications of Artificial Intelligence (AI) to meet those demands.

Objective of the Research

The purpose of the research was to study on customers' perspectives on automated Interactive Voice Recognition services in the banking industry in Sri Lanka. So, research was conducted in qualitative approach. The researcher has worked with a developed framework and then suggested a new model based on the concept of Artificial Intelligence (AI) and collected primary data from hundred interviews with an open-ended questions in services of Interactive Voice Recognition (IVR) in the Banking Industry in Sri Lanka. Services both in Interactive Voice Recognition (IVR) and Customer Satisfaction (CS) are significantly broader therefore this research is limited to carry out study on telephone customer services on IVR within the banking industry in Sri Lanka. And also, the study is limited to a smaller sample because it has created more revenue to discuss the subject indepth and with open-ended questions with the customers, with the aim to create a deeper understanding of their perceptions.

Research Problem

Customer satisfaction has been given the second importance by service industries when IVR is concerned. It has seen that they expect more benefits from IVR at the time of introducing for promote services than customer satisfaction. But, they expect customers to be adopt to it expansively. Therefore, an existing theories have explained how organizations can benefit from selfservice and how customers today have adjusted to IVR technologies. However, an implementation of advance services in IVR are relatively criticized and existing research within this arena is limited and scattered. As a result, this research has focused on how IVR can promote customers to adopt to receive benefits from AI perspective when it is dependable and trustworthy than a cost saving mechanism for organizations.

Literature Review

Artificial Intelligence (AI) first appeared soon after humans developed the electronic digital computing that makes it possible. So, AI and its technology has ridden waves as a branch of computer science that aims to make computers perform tasks nearly similar to human intelligence processes such as learning, deduction and decision making. Artificial intelligence, as a term, is given to the most recent computer science which belongs to the modern generation of the computer. It aims at making the computer simulate the intelligence processes inside the human brain and to give it the ability to solve problems and make logical and well-organized decisions like the human brain. Therefore, as (Marvin, 1961; Edward, 1977; Allen, 1983 & Douglas, 1979) mentioned AI covers a broad range of technologies and applications, some of which are merely extensions of earlier techniques and others that are wholly new. Also, there is no generally accepted theory of “intelligence,” and the definition of machine “intelligence” changes as people become accustomed to previous advances. Further, (William, 2016) urged that Artificial Intelligence is whatever hasn’t been done yet. So, it seems that AI has not yet experienced wide-scale commercial deployment. Anyhow, as (Al-Hasaini, 2002) emphasized that AI aims is to understand the complicated mental processes performed by human brain while practicing "thinking" then interpreting those processes to equivalent computer processes that increase its ability to solve complicated problems. Similarly, Interactive Voice Recognition (IVR) is the result of service sectors incorporating self-service technologies. Therefore, as (Meuter et al., 2000) explained that these are incorporated using various interfaces that make
involvement of an affiliated employee. Further, it can be seen as (Fluss, 2009; Robertson et al., 2016) focused that the most recent versions of IVR are able to give full answers to the customers without an actual human being involved in the call. But, it is acceptable that the sophisticate technology plays a key role but one of the significant matters is as Bitner (2001) urged that technology can be used to enhance customer satisfaction because as (Davis and Heineke, 1998) mentioned that technology creates revenue in greater manner to the customers’ satisfaction. But also not only that, as (Rekha et al., 2016; Vanneschi et al., 2018) criticized that AI technology can increase service quality by using knowledge of the specific consumer and adapt offerings and solutions automatically. Further, this may lead to personal interactions and relationships between the customer and a service provider to influence as (Medler-Liraz & Yagil, 2013; Fullerton, 2014) studied for the customer satisfaction. However, it has seen that only very few studies provide evidence from the customer perspective from the service industries especially in banking sector that the importance of AI-technology to enhance their satisfaction. Further, it reflects that when technology ease of use, it will lead to the Technology Acceptance Model (TAM) which has illustrated in figure 1.1. and it has explained that the technology acceptance model uses user characteristics and perceptions to predict the users intention to use a computer system. Based on perceived ease of use and perceived usefulness, the user forms an attitude towards using the computer system which leads to the behavioral intention to use. Additionally, this model is playing an important role in between IVR and AI because technology and software have been developing rapidly over the last decades, so those concepts reflected widely in customer operations. Even though customers are more used to technology these days, it is still as important as ever to predict their perception of a computer system to ensure that they will actually use it. So, in this scenario, it has indicated very broadly that users of TAM belief acceptance engages as (Davis et al., 1989) critically mentioned that certain type of technology towards to perceived usefulness and perceived ease of use. Based on this, it can be argued that consumers’ willingness to engage with new technology depends on how easy to use and how beneficial to use as (Immonen et al., 2018) documented an alternative option.

Figure 1.1. Technology Acceptance Model (TAM) (source: Davis et al., 1989)

However, as (Pantano and Di Pietro, 2012) studied that technology acceptance model has to consider customers’ technical skills, requirements, involvement in co-creating of technology systems and also it can be applied to generate profits in different context. Therefore, customer satisfaction in services provide has to be consider at the higher level because If a customer is frustrated, angry or disappointed in the provided product or service as (Hoffman & Bateson, 2010) urged that harming the reputation of the company. Similarly, the service is to be perceived as high quality, both the technical and functional aspect of it needs to be as (De Keyser and Lariviere, 2014) pointed that at higher quality. So, based on these assumptions that the conceptual model has suggested that perceived usefulness and perceived ease of use influenced on customers’ attitude toward to use the services.

Therefore, based on Technology Acceptance Model (TAM), this research has developed a model which is based on Customer Acceptance Model (CAM) which has illustrated in figure 1.2.

In this model one of the key aspect is that not given consideration on external variables because main purpose is to explore customers’ perceptions. As a result, this model is focused on to see core relationships in between perceived usefulness and attitudes instead of perceived usefulness and intention to use as of TAM because of qualitative study which is not easy to measure the real involvements.

However, with comparison of TAM and CAM following facts reflected very importantly on customer satisfaction on services of IVR in the banking industries in Sri Lanka.
Research Findings

It has been importantly that one of the important facts of the Interactive Voice Recognition System can cut down cost at the higher range when service operations are concerned. But, the most important matter of service industries that to let customers to enjoy the services instead of leave away from services. Therefore, this idea is equally similar with the end goal of Interactive Voice Recognition because using of this kind of sophisticated technology is not to use for leave valuable customers. So, the reduction of responsive time is mentioned one of the positive impact of IVR but results have shown that the respondents were discontent with the time as their expectation with the use of a machine was much higher. As a result, responsive time also seemed to be the major cause of their frustration and immediate withdrawal from the conversation. This was a common consensus among entire respondents that in case of poor services and long time for non-responsive in AI are withdraw all their business activities with the company.

Also, research findings have very clearly reflected mainly that in human interaction prefers to gain benefits of talking to a real human and to speed up of the process of their problems solving. This has indicated that because the possibilities of the trained staffs work and their professional skill in resolving issues as (Martelo-Landroguez and Martin-Ruiz, 2016) pointed out that professional staffs in the service clusters of banking industry are trained to solve issues as quickly and efficiently as possible very significant. Also, customers who had trouble with modern technology insisted on having a human interaction rather than with an AI as (Immonen et al., 2018) stated that customers likely be struggling with this kind of service would much prefer a human interaction. Additionally, some respondents were reflected that elderly customers who are less acquainted with the technology are daunting to cope with AI. Also, results have shown that though IVR seemed always available and that time-saving technology on a deeper level but many respondents view the system as a shallow front line service with limited accessibility. The respondents were vocal about their discontent with the system and were not afraid to share their experience with their acquaintances that customers are not afraid to talk about their bad experiences in service organizations with others. Although many respondents were positive to the idea of IVR, they could not fully grasp the end goal of IVR and to whom it benefited the most, mainly because of the inconsistencies with the technology. This could possibly be because of the lack of communication from the company side to make it evident for the customer base about the limitations of the IVR.

Conclusion

Interactive Voice Recognition and Artificial Intelligence are new approaches to promote and develop services in economies of the world. However, it has seen that customer satisfaction is merely taken into consideration because most of the services providers in the banking sector intend to use IVR for cost cutting mechanism instead of to enhance customer satisfaction. Therefore, this research has tested how Artificial Intelligence is vital in IVR to promote customer satisfaction. For that purpose the research has developed a new model which is Customer Acceptance Model (CAM) based on Technology Acceptance Model (TAM) to use ways in which to promote customer satisfaction in Artificial Intelligence perspective in IVR platforms. One of the significant reflection of the research findings are that customers are keen to learn and engage in IVR systems as far as those systems are easy to use and provide an adequate customer services. Also, it has urged that currently using IVR may questionable due to lack behind the customers to choose most benefit approaches to enjoy services. As a result, customers are skeptical towards the quality of AI-driven customer services. But, most of customers believe that AI will be better in the future with the change in technology of IVR.
Reference


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