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Assessment Dietary of Geriatric Male Residing in Old Age Home: A Case study of Udaipur India

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ABSTRACT

A human's life is normally divided into four main stages: infancy, childhood, adulthood and old age. Every year, on October 1st, "World Day of the Elderly" is celebrated all over the world. From 1990 to 2025, the elderly population in Asia has increased from 50% of the world's elderly to 58%. The present study was conducted to assess the health and dietary intake of elderly residents of a nursing home in the city of Udaipur. For this reason, the sample of elderly people aged 59 to 75 were randomly selected. The total sample of the present study was made up of 100 elderly men from nursing homes in Udaipur city. Therefore, the total sample size was 100. Nutrition is considered a fundamental part of the individual or the family. A dietary survey was conducted using the 24-hour recall method to find out the daily dietary pattern and dietary nutrient intake of the elderly (men) selected for the study. The results of the research of the dietary survey show that the diet of elderly men compared to balanced diets was substantially inadequate in cereals 43.75%, pulses 64.25%, roots and tubers 3.97%, green leafy vegetables 10. 38%, fruits 14.76%, milk and derivatives 77.8%, sugar 81 65.12% and fats and oils 99.75%. The food intake of institutionalized older males was lower than the RDA, a significant difference was found between grains, legumes, fruits, roots and tubers, green leafy vegetables, milk and dairy products, sugar and fat, and oil.

Key words: Assessment, Elderly, Nutrients, Recommended dietary allowance, Geriatric

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INTRODUCTION

Aging is an irreversible biological change that occurs throughout an individual's life and continues until death (Toricelli et al., 2021) old age varies from person to person. Singh et al., (2004) defined aging as those changes in structure and function that occur after reaching reproductive maturity, result in a decrease in the ability to do the work required to overcome environmental or internal challenges, and result in an increase in deaths. in time. The cutoff point is the age of 60, above which all individuals are known as elderly. This age group is known as the "geriatric age group" (Anand, 2004). Aging is the phase of the progressive deterioration of various physiological systems. Certain physiological and structural changes affect nutrients and food intake such as: reduced metabolism, including reduced BMR, lack of physical activity and poor appetite. This occurs mainly due to a lower interest in food; tooth loss and difficulty chewing; atrophy of the taste buds; some digestive problems, etc (Amarya et al., 2015). From 1990 to 2025, the elderly population in Asia will increase from 50% of the world's elderly to 58%. There are approximately 600 million seniors living on this planet. By 2050, this figure is expected to reach a quarter of the two billion (Kumar,1997). In 2012 he said that India has around 100 million seniors and that the number is expected to rise to 323 million by 2050, making up 20% of the total population (HelpAge India, 2014). According to the 2011 census, the population density of the Indian state revealed that Kerala ranks first with the highest percentage of elderly people accounting for about 12.6% of the total population

In the Indian family system, the elderly is now forced to stay in nursing homes due to modernization and globalization, so families are falling apart. The family is the most important institution for the elderly because it provides them with the help, love, affection and care that are really needed at this stage of life (Rathi et al., 2017). Today, nursing homes are set up on the initiative of governmental and non-governmental agencies that provide shelter and support to the destitute elderly. Currently, 1018 nursing homes in India. Some are paid, some are free, and some are both.

Good nutrition can make a significant contribution to the health and well-being of older people and their ability to recover from the disease. In India, older people suffer from the dual medical problem of both communicable and degenerative diseases. There are a variety of factors that influence the dietary intake and nutritional status of older people. The causes of nutritional deficiency in the elderly are likely to be multi factorial and reflect physical and physiological deficiencies as well as psychological influences. The National

Nutrition Monitoring Bureau (NNMB) Survey (1996-97) on Diet and nutritional status of the older population reported that the percentage of older people who met 100 percent of the recommended dietary allowance (RDA) for all nutrients was 2.8 percent and only of 4 percent of the elderly, the intake of macronutrients such as energy, protein, and micronutrients iron and calcium was equal to or greater than the RDA.t Therefore, study aims to assess the dietary and nutrient intake of male who aged between 59 to 75 year and also residing in old age home.

METHODOLOGY

The present study was conducted in the city of Udaipur among the age group 59-75 years old male residing in the nursing homes in the city of Udaipur. Interview schedule was distributed among 100 elderly men living in three nursing homes in the city of Udaipur, beside nursing home data was also collected from the elderly people living locally. Figure 1 shows the nursing home

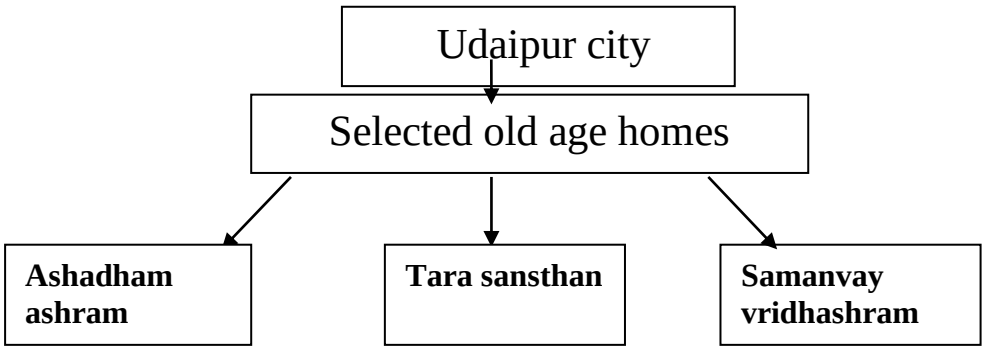

Figure 1: Flow chart depicting old age homes taken under study

A total of 100 old people (male) of fifty-nine years and above were selected by random sampling technique. Sample selection was based on the feasibility and level of cooperation.A well-structured interview schedule was developed for data collection and the interview technique was used. The relevant data and information from interviewees were collected. Subjects were contacted at the workplace and in nursing homes.

Diet is considered a critical part of the individual or family. A dietary survey was conducted using the 24-hour recall method to find out the daily dietary pattern and dietary nutrient intake of the seniors selected for the study. Information on each person's food consumption

pattern was collected through interviews. All subjects who agreed to participate had to fill out a diet form. This record was used as a reference method. Participants were asked to accurately describe their 24-hour food intake. Each of the listed foods featured a full description of their usual portion sizes.Nutrient intake was calculated using the nutritional value indicated in the food consumption tables (Gopalan et al., 1971)**.**

RESULT AND ANALYSIS

The results obtained during the survey were subjected to an adequate statistical analysis, tabulated and systematically presented through classified and supporting material which allowed the survey to interpret the complete results. In the present study, information on the eating habits and eating patterns of the elderly (men) was noted and the adequacy of the diet in terms of food intake and nutrition was assessed by the booster method.

Meal Pattern: The general meal pattern of the elderly revealed that most of the elderly followed a four-meal pattern. Both groups of respondents drank morning and afternoon tea. Main meals mostly included chapatti or khichdi / rice or both with seasonal vegetables or dal or kadhi.

Food intake: Food is the carrier of nutrition for a healthy life. The nutritional status of each individual is directly influenced by food intake. A proper diet consists of various nutrients.
In the present study, food intake was assessed in terms of various food groups, including grains, legumes, fruits and vegetables, milk and dairy products, sugar, fats and oils. It was compared with the recommended dietary intake (RDI) provided by NIN (2010) (Table 1).

Cereals: The main cereals consumed in India are rice, wheat, maize and bajra. In the Indian diet, cereals provide 70-80% of the energy intake (ICMR, 1990). Wheat and rice were the main cereals consumed by the subjects. Wheat and rice were consumed in the form of chapatti, snakes, etc.

It can be deduced from Table 1 that IM consumed respectively 144.39 ± 20.52 g of cereals per day, which turned out to be lower than in RDI et. 43.75% in IM. There was a significant difference ($p > 0.01$) in the group.

Pluses: Pluses and Legumes are the main source of protein in the vegetarian diet. Proteins are useful for growth and maintenance. Table 1 shows that only 64.25% of MI consumed legumes. The mean NIM intake was 38.55 ± 2.72 g of MI, respectively.

Green leafy vegetables: Green leafy vegetables are rich good sources of calcium, iron, β-carotene, vitamin –C etc. the mean intake of GLV in IM 10.38±11.88. The intake level of GLV in IM was significantly low because of less consumption and low availability in institution.

Milk and Milk products: Milk is good source of protein, calcium and riboflavin. The mean intake of milk and milk products in IM were 233±56.23 ml. Table 1.1 shows that 77.86% of RDI was taken by of RDI. There is a significant difference ((p>0.01) between IM consumption and RDA.

Roots and tubers: Roots and tubers are richest source of energy among vegetables. The mean intake of roots and tubers in NIM was 6.18±10.26 g/d.

Other vegetables: Vegetables other than green leafy vegetables and roots and tubers are categorized as other vegetables. This group of vegetables not only adds variety to the diet, but also provide vitamin, minerals and dietary fiber. The mean intake of other vegetables in IM, it was 107.36± 36.46 g/d. which was significantly higher than RDA.

Fruits: Fruits are generally good source of vitamin C. It also contains pectin, which provides bulk to the diet. The mean intake of fruits of NIM was 53.33±59.36 g/d which was 26.66% of RDA.

Sugar: Sugar and jiggery are sweetening agents and consumed by almost all people in varying amounts. Table 1.1 revealed that the mean intake of sugars IM was 16.28±7.94 g/d which was only 65.12% of RDA.

Fats and oil: The visible fats commonly consumed in India were hydrogenated fats, oils and butter and ghee. Fats and oil provide essential fatty acids like linoleic and linolenic acid which are essential fatty acid for health. The mean intake of fats and oils of IM was

29.18±13.88 g/d which was99.75% of RDI and There was significant difference ((p>0.01) between fats and oils intake.

Nutrient intake: Mean nutrients intake of 100 elderly male were calculated by using Food Composition Table (Gopalan et. al., 1989), and compared with Recommended Dietary Allowances (NIN, 2010). Major intake of nutrients like protein, fat, carbohydrate, energy, calcium and iron were calculated. The mean intake of protein, fat, carbohydrate, energy, calcium and iron of IM were 34.59± 7.9, 37.91±14, 146.6±26.4, 1123±212.56, 530±201.45 and5.6±1.4 respectively. Table 1 shows that there is no significant difference between the energy intake of IM.

Table 1: Mean nutrient intake and percent to RDA of institutionalized male respondents

NUTRIENTS	GROUPS	MEAN OF NUTRIENT INTAKE/ PER DAY	RDA	PERCENT TO RDA	'T' VALUE	P VALUE
ENERGY (KCAL/D)	IM	1380.4	2320	59.50	2.209	.029
PROTEIN (G/D)	IM	29.57	60	49.28	4.036	.000
CARBOHYDRATE (G/D)	IM	171.98	348	49.42	5.348	.000
FAT (G/D)	IM	33.32	50	66.64	2.011	.047
CALCIUM (MG/D)	IM	324.75	600	54.13	11.403	.000
IRON (MG/D)	IM	3.93	17	23.12	9.024	.000
BETA-CAROTENE (µG/D)	IM	2134	4800	44.60	0.55	.603
ASCORBIC ACID (MG/D)	IM	13.96	40	34.90	10.239	.000
THIAMIN (MG/D)	IM	0.57	1.2	47.50	8.232	.000
RIBOFLAVIN (MG/D)	IM	0.51	1.4	36.43	9.175	.000
NIACIN (MG/D)	IM	4.46	16	27.88	11.583	.000

Source: Field data

CONCLUSION

The above results show that the food intake of the elderly institutionalized male, there was a significant difference found in between cereals, pulses, milk and milk products, green leafy vegetables, roots and tubers, fruits, sugar and fats and oil. Results reveal that the intake of energy, protein, carbohydrate, iron was significantly lower in elderly males whereas no significant difference was found in intake of fat, and calcium by subjects as compared to RDA. There are so many reasons for this lack of consumption like less physical activity, stress, improper availability of food, lack interest in food because of less taste etc.

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Unspoken Inequalities: Effects of Online Learning Responses to Covid-19 on Migrant Children and Their Families, Chiang Mai, Thailand

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ABSTRACT

The COVID-19 pandemic has taken its toll on children's education worldwide, albeit with different impacts. Children in impoverished families have to suffer the direst impacts from a lack of access to education, public health, food and various forms of threats. In Thailand, the first confirmed COVID-19 infection was identified in January 2020. The government eventually imposed the Emergency Decree on Public Administration in the State of Emergency (the Emergency Decree) in March 2020, to put in place social distancing and closure of schools, among other things. In May the Thai government also introduced "online learning" in an effort to continue the education of children. Such "online learning" hinges on using homes as a base to provide learning. This article is an attempt to analyse the impacts of such "online learning" policies on the accumulation of human capital among the second-generation of migrant children in the context of the urban poor in the city of Chiang Mai. This analysis is based on data acquired from the research on "The adaptation of second-generation Shan migrant children through education in Thailand". The paper analyzes 13 migrant families whose children studied at Grades 6 and 9 at municipal schools in Chiang Mai city. Semi-structured interviews were employed to collect data from representatives of 13 migrant families during August and September 2020. It was found that the announced online learning was not implemented effectively because most of the children's homes lacked resources to access online learning tools. Such findings indicate a structural problem in which the Thai authorities make the migrant workers vulnerable in terms of economic citizenship and public health at the expense of their children's education. Such workers and families are forced to stay outside the public welfare, security and social safety net both before and in the midst of the COVID-19 crisis.

Keywords: COVID-19, Thailand online learning policy, Migrant children, Educational inequality, Chiang Mai Municipal schools.

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INTRODUCTION

A city teeming with diverse ethnicities, Chiang Mai has been a major trade hub in the upper reach of Mekong since precolonial times. In the late 20th century, Chiang Mai's economy benefited from cheap labor constantly migrating from neighbouring countries. People of Tai Yai/Tai (Shan) are among migrant workers who have contributed enormously to Chiang Mai and the North. But the economic lives of migrant workers are frequently precarious, a predicament exacerbated by the policies of the Thai state. Such policies confine workers from neighbouring countries to unskilled labor subject to highly dangerous work, including construction or in the agricultural sector, the latter frequently exposing them to harmful chemicals. Additionally, there is a lack of freedom of association, precluding unionization. Finally, the labor laws in Thailand restrict their access to social welfare, regardless of their having work permits and having entered the country legally.

Their vulnerabilities also include their lack of legal citizenship, rendering them un2documented and without work permits. Pierre Bourdieu explained how such a phenomenon emerged worldwide propelled by globalization and neoliberalism. A massive number of migrants have neither job security nor the capacity to fend for themselves. Such a lack of sustainability extends to their children. Meanwhile, such vulnerabilities tend to appear in major cities around the world which adopt extreme nationalism and hostility toward both old and new migrants. Such a trend is once again simmering in different corners around the world and obscuring the contribution of migrant workers toward the accumulation of economic wealth and cultural capital (Rios, Burke, & Aleman-Tovar, 2021).

As for Thailand, migrant workers are a critical manufacturing resource, despite the fact that they are not included in the nation's social welfare and social safety net. According to the Foreign Workers Administration Office, in the middle of 2020 during the Covid-19 crisis, there were 2,494,272 migrant workers issued with work permits throughout the Kingdom (Zhang, 2021). The number was about half a million lower than that of August 2019 (Office, 2019-20). Just for Chiang Mai which is the largest employment hub in the North, in August 2020 it was found there were migrant workers employed in 101,022 jobs throughout Chiang Mai: about 28,000 jobs fewer than in the middle of 2019 (Office, 2019-20). Most of the migrant workers came from Myanmar.[2] Besides Shan, the other ethnicities included Burman, Karen, Kachin, and Muslim Burman. The decline of jobs during the Covid-19 crisis can be attributed to two major causes. First, many workers moved back to their

country before the Thai government's border closure. Secondly, many remaining workers fail to renew their work permits, becoming illegal workers. The latter scenario has made the lives of the migrant workers and their children even more vulnerable.

ONLINE LEARNING POLICY DURING THE COVID-19 CRISIS

Thailand's first confirmed infection was in January 2020. In Chiang Mai, the first such case was made known in April of the same year. Various preventive measures have since been introduced at different levels and relief measures to cater to the vulnerable populations with the government budgeting two trillion baht or 14.3% of GDP from May-August 2020. Such relief and compensation have been disbursed to ameliorate the impact of Covid-19 among various groups of people, including employees and workers in the tourism sector, low-income people, vulnerable groups, farmers and unemployed persons outside the social security net as well as new graduates still unemployed or looking for jobs. Nevertheless, such relief and rehabilitation measures do not cover migrant workers whose livelihood is really on edge. They have to exploit themselves just to make their ends meet. A question in point is, what will be the impacts on the education of their children, as part of the reproduction of human capital?

In "The Forms of Capital," (1986), (Bourdieu & Richardson, 1986) suggests a model of capital accumulation in which individuals hold economic, cultural and social capital (Challoumis, 2021). The continuity of such capital persists from generation to generation and warrants the conversion of profits from one kind of capital to others. In addition, it requires the acceptance of society to offer opportunities and conditions to ensure such reproduction of capital until they reach a level for sustainable survival. Based on this model of capital accumulation, it should be interpreted that the investment in cultural capital through the provision of education to the second generation of the families of migrant workers should be geared toward increasing the human security and agency of the children to ensure their being skilled labor in the domain of economic capital, and that they can accumulate various other forms of cultural capital (Rios et al., 2021). There is such possibility, as Thai society tends to embrace the children of migrants better than their parents, and the Thai business sector is open to accepting them as workers, earning competitive salaries.

In response to the first wave of the COVID-19 pandemic, the government imposed an emergency decree on 25 March 2020, introducing harsh preventive measures including social distancing, closure of tourist attractions, schools, airports and border checkpoints between

Thailand and neighbouring countries. Schools were among the initial places where the government imposed stringent measures to prohibit any activity including the use of the school buildings and all other educational facilities for teaching, training or any other activities with a number of participants. The order became effective on 3 May 2020, almost the same time as the school opening of all primary schools. The break of the school semester was thus put off to until 1 July 2020. In addition, during May and June 2020, homes were proposed as an alternate site to provide education. This was a dramatic reversal in the history of modern education in Thailand, in which it has been found that the Thai state had absolutely removed the education of children from their homes. Moreover, the homes of people in poverty are already confronting other vulnerabilities and precarity due to the necessities of response to the outbreak of COVID-19 (Hoang et al., 2019; Pattaravanich, Williams, Lyson, & Archavanitkul, 2005). Concerns were raised that such facilities shall not ensure a proper and sustainable learning ecosystem. This would simply exacerbate the already low-quality education and learning of the vulnerable children (Hoang et al., 2019). The issues were subject to widespread debate in various online platforms.

Online learning was declared an urgent education policy of the country.[5] It encompassed at least two components: 1) schooling through distance learning (Distance Learning Television Station - DLTV), and 2) the application of digital technologies to schooling whereby the learners do not need to be physically present in the classrooms (Luangvilai, 2018). It was assumed that the children's homes could serve as a space of learning through digital platforms leased by the Ministry of Education and other public agencies including Zoom, Google Classroom, and Google Hangouts (Office of the Basic Education Commission, 2020). Although such platforms had been proposed for organizing the teaching since before the COVID-19 pandemic, they had faileded to gain any traction. As a result, schools found it hard to adapt to online learning, and some found it impossible to implement it (Tantip Kitjaroonchai, 2012). Such distance learning had first been adopted in Thailand's basic education in 1996, initiated by the Distance Learning Foundation under the royal patronage of King Rama IX. The Foundation has used such distance learning in remote schools where the border patrol police supply the teaching. The Ministry of Education has since extended the method to schools that could not afford teachers for all levels. Nicknamed "studying with box teachers" (as students sat in front of analog TV screens), such distance learning rapidly expanded into urban areas during the COVID-19 pandemic. The Ministry of Education quickly produced content and multiplied broadcast outlets from three to 17

channels. The two-pronged online learning first had a test run on 18 May 2020, after which multi-faceted problems were identified, including the inability of the Ministry of Education to provide resources on time, such as the teaching materials, media, and receivers among schools as well as access to the frequency range. This is not to mention the hidden costs to various types of families since schools were no longer the delivery-point of learning.

The problem with using "homes" as a learning ecosystem is problematic in view of differences between well-off homes and needy homes, urban homes and remote area homes. The "homes" of vulnerable children have gained public attention since educational inequality has manifested itself glaringly and repetitively in terms of access and survival. Attention has also been paid to the quality of online learning policies and how knowledge is imparted to children. Such home-based education thus reflects how the vulnerable children are neglected by the state, since the internet penetration only covers 41% or around 30,635 villages throughout the country. Meanwhile, even though makeshift homes in the sprawling urban area can in principle gain high speed internet access, these families cannot afford to buy devices and to pay the internet service fees. In 2019, 25% of Thai households lacked internet access in the home: 19% in urban and 31% in rural areas. Thailand's rate of subscriptions for mobile broadband access was 89 per 100 inhabitants, but the rate for fixed broadband subscriptions was only 15 per 100 inhabitants. The rates were above-average for countries classed as "developing" (middle-income countries), but considerably below the rates for "developed" countries, which were 122 and 34 per 100 respectively. These figures suggest that while a high proportion of children have some access to the internet through mobile phones, far fewer can access it through fixed-line services, which are more suitable for computers and for affordable transmission of video. Indeed, in 2019, only 16% of Thai households had a computer: a startlingly low rate; the average for "developing" countries was 39% and for "developed" countries 82%.

Data from Thai government agencies, including the (Office of Equitable Education Fund, 2018) reinforces the notion that there is a lack of digital devices among poor students. In addition, the Office also stated that the students who can be classified as "poor and destitute" were about 35% of those enrolled in school system or around 1,696,433. These children earn as little as 42 baht per day, which is barely sufficient for the purchase of nutritious food (Luangvilai, 2018). Therefore, during the first wave of the Covid-19 pandemic, children from poor families in Thailand, where the number of the poor expanded

from nine to 17 million(Hoang et al., 2019), have to face a drastic lack of resources needed for the investment in online learning. They have no access to the internet, digital devices including desktop and laptop computers, tablets and smartphones and the high-speed internet service fees. The debate about the children's homes also includes how such an ecosystem does not favour their learning due to a lack of private space, constant noise distraction and a lack of parental care.

FINDINGS AND ANALYSIS

The municipal schools of Chiang Mai city are small and middling in size, with an average 100-150 students per school. Ten out of eleven schools in the study provided classes from kindergarten level to Grade 6. The other was a junior high school (Grades 7 to 9).

The economic pressures during COVID-19 unleashed substantial impact on the learning of the children. Among the 13 sampled families, only one managed to buy a new TV with satellite receiver to ensure distance learning for their child (who was in the ninth grade) (Challoumis, 2021). Other families could not afford to buy devices to facilitate online learning (Tantip Kitjaroonchai, 2012). Most families indicated that they felt concerned about their children's education, but there were other expenses of greater priority including rent, food, and face masks. This was life on edge, and they had to manage to ensure their survival and to overcome starvation and illness of their family members. In addition, they felt concerned about being deprived of various relief measures. A mother recounted: "lately, I have to save money to buy cloth masks and hand sanitizer...several hundred baht per month....My children are asked to stay home, while parents go out shopping for their necessary items." In terms of economic capital, the children's families prior to the Covid-19 pandemic earned about 20,000 baht per month but the couples' income has reduced to one third of the normal rate, as their working hours reduced. According to the study, in seven of the 13 families both spouses barely had any income. Among the other six, the parents earned as caretakers of dormitories, security guards, hotel staff and casual hire workers.

However, the study found the families used critical ways of thinking and investment tactics for the education of their children by deploying some kinds of community wealth cultural assets. They all pointed out that they were determined to invest in their children's education to engender cultural capital which they hoped could help them to climb the social ladder through the second-generation children. Such tactics manifested themselves in the devotion of money and other resources into education and the inculcation of habits, such as

convincing the children to adhere to the school rules and to dress cleanly, and by parents participating heavily in the schools' activities. Such devotion has yielded sympathy from the schools toward the children regarded as "the others" in the midst of xenophobia. The study found that families continued to support their children's education by imparting certain habits in them through storytelling, e.g., by recounting their difficult life in the past until present, their aspiration to attain a better life than the one in which they had to work so hard. According to (Rios et al., 2021), these aspects of capital are portrayed as the "community cultural wealth" of migrant worker communities in the USA (Rios et al., 2021).Rios illustrates how community cultural wealth is a cultural capital the children can accumulate to drive forward their education. Similarly, the teachers in the present municipal schools often reiterated how "Shan parents tend to give more importance to their children's education than the Thai or native Northern parents…Their children appear to pay attention to their studies, and adhere to the rules; they are helpful and highly patient."

CONCLUSION

This research exposes the weaknesses of online learning policies during the first wave of the Covid-19 pandemic given a lack of comprehensive analysis of the state from the upstream (policy-making) to downstream (delivery of learning activities), which would involve a closer understanding of the homes and the students, particularly among the vulnerable populations. The state has invested hugely in the expansion of long-distance learning through the production of content for distance learning programs and the procurement of digital TVs and platform subscriptions for schools. But the failure to pay due attention to the ways in which this investment could impact less-privileged students, like those in the present study, might suggest that the policy served a political function of educational stratification and cost-saving, despite the fact that the national education system in principle espouses educational equality. Migrants, along with other marginal sections of Thai society are thereby impeded in accumulating cultural capital.

Conflict of Interests

The author declares no conflict of interest.

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Factors Affecting the Institutional Motivational Orientation of Public University Teachers in China: Evidence From H University

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ABSTRACT

Work motivation of employees can determine work efficiency, which is a key factor affecting the success of an organisation in a competitive market. Compared to the employees working in the business organisation, people who work public sector are not only affected by individualistic motivational orientation but also affected by institutional motivational orientation. Like western countries, the public sector has also undergone some significant changes in meeting the transformation of the economy in China. Therefore, it is necessary to explore if Public University teachers can keep their institutional motivational orientation under the background of privatisation trend of public sector in China and what factors can influence their institutional motivational orientation. Therefore, there is merit in a systematic investigation of the institutional motivational orientation of public university teachers. This paper sought to fill this gap in the literature. Using a case of H University in China, this paper investigated what factors are closely related to the institutional motivational orientation of Public University teachers in three contexts: transformation context, education sector context and societal culture context. The findings revealed that the institutional motivational orientation of public university teachers is affected by both organisational factors happened in transformation context and societal culture context but is more influenced by the societal culture context. The demographic factors of public university teachers and their institutionalised beliefs in education have no effect on their motivational orientation.

Keywords: Employees, motivation, institution, organization

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INTRODUCTION

Mullins (2016)) believes that the relationship between companies and their employees is largely influenced by whether employees can have enough motivation to work and whether they can be satisfied and rewarded from work (Barsoum, 2016). Although enhancing the motivation of university teachers can directly improve the quality of teaching practices, the status of some university teachers in China is still not optimistic(Tsang, Teng, Lian, & Wang, 2021). Professor Li Liguo of the School of Education of Renmin University of China pointed out: "Compared with international counterparts, the treatment of teachers in Chinese universities is generally low, and the proportion of school operating funds used for human expenditure is relatively low." Research on the survival status of teachers in Maxus University in 2018 shows that university teachers work an average of 48 hours a week, calculated on the basis of 5 working days a week, the average daily working time is nearly 10 hours. In addition, 88% of the interviewed university teachers felt that their work brought moderate to severe pressure(Tang & Sampson, 2018). More than 80% of university teachers are not satisfied with their monthly income and over 30% of teachers have zero salary increases in three years.

Based on these situations, I believe that institutional motivation orientation of public university teachers plays an important role in motivating the public university teachers to work (Steijn, 2008). A number of studies have explored the factors affecting the motivation of employees and examined the relationship between motivation and working behavior in the public organisation (Breaugh, Ritz, & Alfes, 2018). Although these studies have contributed to the understanding of how to improve the motivation of employees from the managerial perspective at the organizational level, it does not provide an adequate explanation to why the public university teachers can still be motivated when their individualistic oriented motivation are not met in the contemporary society (Tsang et al., 2021).

Therefore, it is necessary to explore if the institutional motivational orientation of public University teachers is affected by the recent changes happened in the public sector in China and what factors are closely related to the institutional motivational orientation of public university teachers in the contemporary China(Tang & Sampson, 2018) . To be specific, does public university teachers with different demagogic features, such as age, gender, educational background and teaching experience will have different level of institutional motivational orientation? Will the organisational factors have a close relationship

with the institutional motivational orientation of public university teachers in china? Are the institutional motivational orientation of public university teachers affected by Chinese societal culture? Are the institutional motivational orientation of public university teachers influenced by their institutionalised beliefs in education sector? This paper sought to fill these gaps in the literature.

Therefore, the primary objective of this paper is to explore the relationship between the demographic factors and institutional motivational orientation of public university teachers. The other related objectives of this study are to explore if the institutional motivational orientation of public university teachers is affected by the organisational factors; and finally, examine whether the institutional motivational orientation of public university teachers is influenced by societal culture and institutionalised beliefs towards education sector.

LITERATURE

Institutional motivational orientation in public Organisations

The concept of PSM arises from the work of (Perry & Wise, 1990) ENREF 4. Their original formulation provided a typology of motivations associated with public service that includes rational (Policy-Making), norm-based (Public Interest), and affective motives (Compassion and Self-Sacrifice) (Stefurak, Morgan, & Johnson, 2020).

The Public Interest factor is centred on the desire to promote the common good and is fuelled by loyalty and a sense of duty to public. The two affective dimensions of Compassion and Self-Sacrifice reflect a sincere belief in the importance public service has on the lives of others and that serving others is a high form of loyalty and commitment to one's country and community. The Compassion and Self-Sacrifice factors, often viewed as the central feature of PSM, reflect an emphasis on altruism and prosocial values. The Public Interest and Policy-Making factors reflect an emphasis on public service and public institutions. Accordingly, there are four categories of institutional motivational orientation in this paper: policy-making orientation, public interest orientation, compassion orientation and self-sacrifice orientation.

The condition of academic profession in higher education in China

a. Transformational context in China

One of the different perspectives to appreciate the influence of organisational factors on public sector motivation on teachers in the public sector is to see it through the lenses of the new public management (NPM). NPM is a topical phrase to describe how management techniques from the private sector are now being applied to public organisation (Lane, 2000).

In other words, NPM is one label to refer to all kinds of public sector reform. NPM is an approach used by public sector across many countries in the developing and developed countries to adopt management practices from the private sector in order to increase efficiency in service delivery. NPM is a part of the managerial revolution that has gone around the world, affecting all countries, although to considerably different degrees (Lane, 2000). Given that researchers have discovered that management practice can influence motivation of employees (Barsoum, 2016). It is reasonable to expect the adoption of NPM will have impact on the institutional motivational orientation of university teachers in the public sector(Tsang et al., 2021).

Hypothesis 1: organisational factors are expected to have relationship with institutional motivation orientation of public University teachers in China.

b. Societal culture context in China

The Chinese culture characterised by collectivism, Confucianism, power distance, face and guanxi (Fang Lee Cooke, 2009). In china, Chinese traditional culture may show in various aspects: harmony, group orientation, leadership, guanxi (relationship)(Wenying Ma, 2012; Wanhua Ma & Wen, 2013). Affected by the Chinese traditional cultural heritage of Confucian of moral standards, Chinese normally believe that human being is a membership of family or society rather than an individual and the organization is seen as a big 'family', so they are more willing to commitment in the public interest than individual interest(Wanhua Ma & Wen, 2013). This argument is also in consistent with what (Hofstede, 2011) ENREF 1 identified that China is a collectivist society. Group orientation make the Chinese believe that they should face and go through the difficulties together with other people (tongzhougongji). Therefore, Chinese are more likely to have the compassion orientation and sacrifice orientation (Steijn, 2008).

Hypothesis2: Societal culture factors are expected to have relationship with institutional motivation orientation of public University teachers in China.

c. Education sector context in China

Since the implementation of reform and opening up, the reform and development of higher education have made significant achievements. A higher education system with various forms, which encompasses basically all branches of learning, combines both degree-education and non-degree education and integrates college education, undergraduate education and graduate education, has taken shape(Steijn, 2008). Higher education in China has played an important role in the economic construction, science progress and social development by bringing up large scale of advanced talents and experts for the construction of socialist modernization(Tsang et al., 2021).

Hypothesis3: Institutionalised beliefs in education sector are expected to have positive effect on institutional motivation orientation of Public University teachers in China.

METHODOLOGY

Sampling and data collection: This study used questionnaire to survey a random sample of 289 public university teachers from H University in China. The questionnaire covered a wide range of questions concerning the institutional motivational orientation of public university teachers. The questions are based on a five-point Likert scale, ratings from "1 strongly disagree" to "5 strongly agree".

RESULTS AND DISCUSSION

Descriptive statistics for all the variables are set out in Table 1. The data in Table 1 shows that many of the variables correlated with institutional motivational orientation of public university teachers. This suggests some preliminary support to our model. For example, there is significant relationship between organisational factors and institutional motivational orientation of public university teachers ($r=.584$, $p< .01$). Similarly, there is significant relationship between societal culture factors and institutional motivational orientation of public university teachers ($r=.690$, $p< .01$). There is also a significant relationship between institutionalised beliefs in education sector and institutional motivational orientation of public university teachers ($r=.463$, $p< .01$). There are no correlations between the demographic factors (age, gender, educational background and teaching experience) and institutional motivational orientation of public university teachers.

	Variable	Mean	s.d.	1	2	3	4	5	6	7	8
1	age	2.70	0.82	1							
2	gender	1.51	0.50	-.207**	1						
3	educational background	1.99	0.67	-.313**	.063	1					
4	teaching experience	3.01	1.11	.661**	-.112	-.251**	1				
5	Organisational Factors	4.03	0.51	-.130*	.048	.046	-.110	1			
6	Societal Culture Factors	3.82	0.64	.065	-.141*	-.039	.056	.573**	1		
7	Institutionalised Beliefs in Education	4.39	0.61	.022	-.050	.088	.101	.534**	.481**	1	
8	Institutional Motivational Orientation	3.94	0.55	.095	-.060	-.045	0.88	.584**	.690**	.463**	1

Table 1. Descriptive Statistics and Correlations

N=289

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.731[a]	.535	.530	.38057

a. Predictors: (Constant), SCF, IF , OF

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.832	.196		4.245	<.001
	IF	.080	.045	.088	1.786	.075
	OF	.267	.057	.246	4.664	<.001
	SCF	.443	.045	.507	9.945	<.001

a. Dependent Variable: institutional motivational orientation avg

Table 2. Results of Multiple Regression Analysis for factors affecting the motivational orientation

The explanatory power of the factors influencing the institutional motivational orientation of public university teachers

The outcome of regression analysis between organisational factors and institutional motivational orientation offers the support to hypothesis 1where this study expects organisational factors play a significant role in the institutional motivational orientation of public university teachers. This simply identify that some privatisation policies applied in the public organisation can contribute to the institutional motivational orientation of public university teachers. The analysis of the data also tested the moderating effect of societal culture (hypothesis 2). As predicted, societal culture has moderating effect on the institutional motivational orientation of university teachers. The hypothesis 3 concerning about relationship between institutionalised beliefs in education and institutional motivational orientation is rejected by the data analysis showed in the Table 2. The reason is might because orientation is more related to a specific behaviour, but beliefs is just the related to the attitude. Therefore, there is no relationship between institutionalised beliefs in education and institutional motivational orientation. The outcome of correlation analysis between demographic factors (age, gender, educational background and teaching experience) and institutional motivational orientation rejects the hypothesis4.

CONCLUSION

This paper sought to identify the factor affecting the institutional motivational orientation of public university teachers in China. Our investigation has found that organisational factors happened in the transformation context and societal culture factors are the main contributors to the institutional motivational orientation of public university teachers.

Contribution to theory and Research implications

This paper has made some contribution to the literature in a number of ways. In the field of literatures regarding the motivation, we have investigated factors affecting the institutional motivational orientation in public sector instead of following the approach adopted by earlier researchers who focussed largely on the factors influencing the work motivation in business organisation. I believe that the Chinese public sector that have experienced changes should also be researched. Therefore, this paper contributes to the literatures in the field of motivation in the public sector with concerning the new public management applied in China. For example, Chinese societal culture is a significant reason why public university teachers can have institutional motivational orientation in the

background of public sector reform. In addition, the institutional motivational orientation of public university teachers is affected by the privatization policy applied in the public organisation. The institutional motivational orientation of public university teachers is not affected by their demographic factors and institutionalised beliefs in education sector. Moreover, most studies analysis the motivation from a managerial perspective at the organisational level, but this paper analysis the motivation in three contexts: transformation context, societal culture context and sector context. In this way, we can see how institutional motivational orientation can be affected differently in different context.

Competing interests

The authors declare no competing interests

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Improving the Quality of The Housekeeping Management Process for Stay at Bridge Suites Hotel

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ABSTRACT

This research paper studies the housekeeping services in Stay Bridge Suites Hotel, which deals with challenges in managing the Quality of Service (QoS). Since there is no standard procedure for serving customers and the staff is required to perform manual tasks, miscommunications between staff present lead to long waiting times. This problem results in frequent complaints regarding the services, which leads to a bad reputation, low customer retention, and improper utilization of resources. The project aims to identify the root causes affecting the QoS and standardize the housekeeping management process. To achieve these objectives, DMAIC (Define, Measure, Analyze, Improve, and Control) methodology was accomplished. As a result, some of the significant factors that affect the waiting time are manual task allocation, seasonal workload, and lack of supervision. Therefore, a preventive automated solution was proposed regarding the scheduling procedure to decrease the service waiting time.

Keywords - Housekeeping (HK), Stay bridge Suites Hotel, Waiting time, Manual task allocation, Quality of Service (QoS), Automation,

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INTRODUCTION

According to the most recent statistics, the hotel service industry represents 38% of the total value in the World Economic Community. Hundreds of millions of dollars are spent yearly to improve service quality. Furthermore, the poor performance of services is responsible for 30% to 40% of operational costs in the service sector (LE, 2010). Therefore, one of the features of a successful hotel business is the continuous improvement of high-quality services that exceed guests' expectations in every manner, from pre-booking until post-stay. Since customers are much more demanding than ever when it comes to Quality of Service (QoS), understanding their expectations and needs is becoming more critical. This allows the hotel to know how the QoS is defined from a customer point of view, helps to formulate customer satisfaction surveys, and influences visit repetition and word-of-mouth suggestions. To sustain the hotel's current position and thrive in the future, it is vital to offer high-quality services to retain old customers and attract new customers. Some of the main concerns for hotel industries are to be aware of guest expectations, have a standard working procedure, and have skilled staff that delivers high-quality services to guests.

PROBLEM STATEMENT

The Housekeeping Department of the Stay Bridge Suites Hotel is dealing with a variety of challenges regarding providing high QoS. As the staff does not have a standard procedure for serving the customer and due to the manual tasks, that leads to miscommunication between the staff and increases the waiting time. Therefore, this project will focus on automating the housekeeping process by developing a software-based system to enhance the QoS and reduce the hotel's services' waiting time.

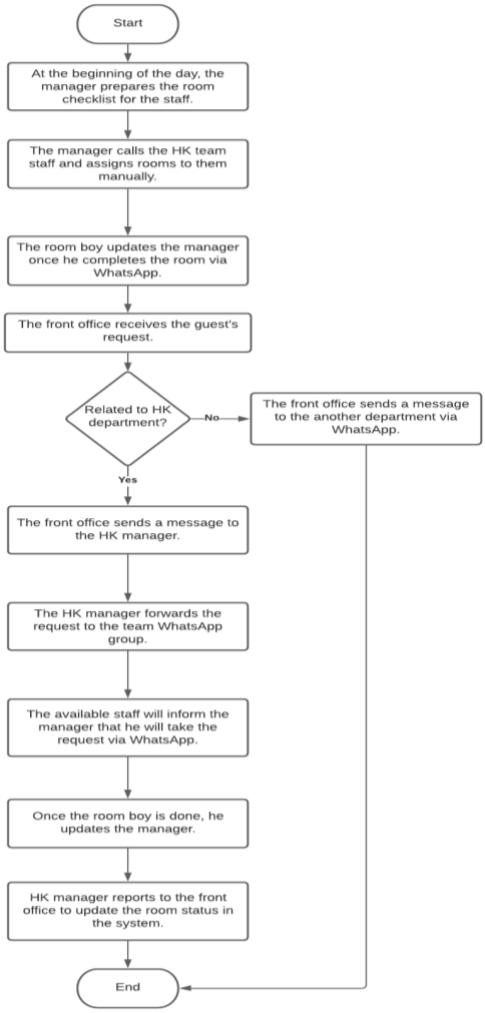

FIGURE 1: THE CURRENT HK PROCESS FLOWCHART.

Afterward, the project will highlight the potential engineering techniques and then select the best technique, which is the DMAIC methodology. The variables impacting the QoS for the hotel's housekeeping department will then be identified and prioritized. Finally, an alternative solution will be suggested and implemented to increase the hotel's QoS and productivity. Figure 1 below illustrates the detailed as-is HK management process flow chart.

VARIABLES/ FACTORS ANALYSIS

An interrelationship diagram for the long service waiting time factors was drawn to understand the cause-and-effect relationships among the factors to identify the key driver and the outcome. The potential factors were collected by conducting a meeting with the HK team and front office team members. As shown in Figure 2 below, first each factor was placed in a box, then each factor was compared to the other factors to identify cause-effect relationship. The factor with a high number of outgoing arrows is a key cause of the issue, and the factor

with many ingoing arrows is the main outcome. For example, manual task allocation affects the guest waiting time, information flow through the department, and QoS. The factor manual task allocation is the key driver since it has the most outgoing arrows and no ingoing arrows. Therefore, manual allocation tasks are the major issue to be focused on for causing a long service waiting time. On the other hand, the two factors: high guest waiting time and low QoS had the highest number of ingoing arrows, consequently, they are the main outcomes. Thus, the manual allocation task needs to be eliminated to reduce the service waiting time and increase the QoS.

FIGURE 2: INTERRELATIONSHIP DIAGRAM.

Eliminating Non-Value Adding Activities

The 5-Whys analysis method was used in this phase to find the root cause of the non-value adding activity, which is the manual task allocation as illustrated in the above interrelationship diagram. The 5-Whys technique is an iterative, team-driven procedure that interrogates a problem by repeatedly asking "Whys" to find the root cause of a specific issue.

The number five refers to that five iterations of asking why are usually sufficient to identify the root cause (Harrington & Voehl, 2016). However, in some cases, it may take more or fewer whys, depending on the depth of the root cause (Harrington & Voehl, 2016). This method was used to obtain preventive actions for the non-value-adding activities.

Non-value-adding activity: The HK manager manually allocates the human resources (staff) to services in papers every morning.

To find the root cause:

1. Why? The system does not have the feature of assigning resources.
2. Why? There is no visibility on staff availability status.
3. Why? The system has limited access to the managers and the front office only.

Root cause: The HK staff do not have access to the hotel's system to update their status.

Corrective action: The HK manager and the front office department should all be integrated with the staff inputs in the system to develop an auto-scheduling process that eliminates the manager's manual allocation, resulting in a reduction in the HK services waiting time.

Room cleaning services VS. Other HK services

Providing services to customers represents a deep concern in the housekeeping department, especially room cleaning services, as they consume more effort from HK staff and long-time duration than other services. To illustrate the fact that room cleaning services have the longest waiting time, the average waiting for the time duration of the room cleaning services compared with other services in HK that are sensitive to customer needs or demand such as ordering inventory items (e.g., bed sheets, towel, shampoo) and additional guest requests (customized services). Figure 3 below illustrates the average waiting time durations for HK services requested during June, July, August, September, and October. According to the bar chart, room cleaning services represent the longest average waiting time among the HK services, 35 minutes on average compared to inventory items order of 17 minutes and additional guest requests of 24 minutes.

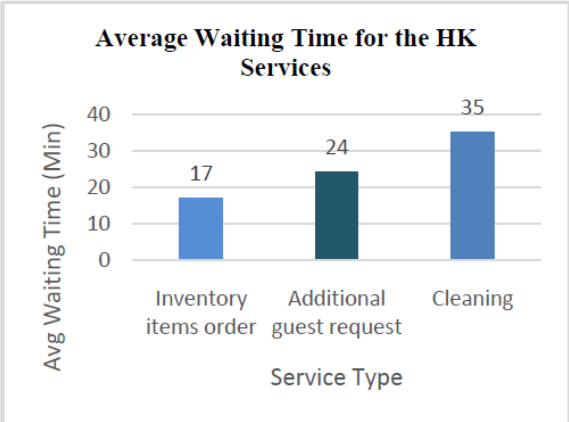

FIGURE 3: AVERAGE WAITING TIME FOR THE HK SERVICES.

Since there are different standard durations for the room cleaning services in Stay Bridge Suites Hotel, as illustrated in Table 1 below, the team should select one room and cleaning type to calculate and compare with other HK services. Thus, the lowest standard duration was determined for comparison, the "Daily Cleaning for 1B" equal to 20 minutes. Compared to the standard time, the graph shows that additional 15 minutes on average were spent in the room cleaning service, which is considered additional waiting time. As the standard duration for the other two services is 15 minutes, approximately two to nine minutes on average are considered as waiting time. Consequently, the graph highlights that room cleaning services have the highest variation compared to the standard time. Hence, the room cleaning service's waiting time should be considered to enhance the QoS of the housekeeping.

Room Type	Cleaning Type	Cleaning Duration (Minutes)
One Bedroom (1B)	Daily	20
One Bedroom (1B)	Checkout	35
Two Bedrooms (2B)	Daily	30
Two Bedrooms (2B)	Checkout	45
Studio	Daily	45
Studio	Checkout	55

TABLE 1: THE STANDARD TIME FOR CLEANING SERVICE.

Service types VS. Customer waiting time

To investigate more about the relation between the service type and the waiting time, the following hypothesis was tested:

H0: Service type does not affect the customer waiting time.
H1: Service type affects the customer waiting time.

A random sample of 12 consecutive days that were exceeding their standard duration was taken to analyze their service waiting duration (day 1 = Monday)

a) Room cleaning service

A regression line has been plotted to study the relationship between the type of service (room cleaning service) and the waiting time, as shown in Figure 4.
The regression equation of the plot is:
Y= 41.60 – 1.666 x (1)

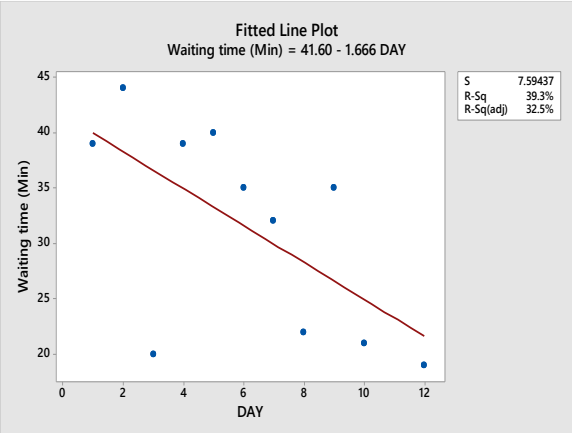

FIGURE 4: REGRESSION LINE.

From Figure 4, the waiting time of cleaning services on days 4, 5, and 6 increased since these were the weekend days and the demand on the hotel and the cleaning services are much higher on the weekends.

The correlation is equal to -0.627, which indicates a strong negative relationship. Additionally, as shown in Figure 5, the P-value equals 0.039, which is less than 0.05.

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	335.657	335.657	5.82	0.039
Error	9	519.071	57.675		
Total	10	854.727			

FIGURE 5: ANALYSIS OF VARIANCE (ANOVA).

Hence the H0 will be rejected. Therefore, the room cleaning services affect the customer waiting time.

b) Additional guest requests

The second type is additional guest services, which means more customized services in responding to the guest requests. This type represents the main concern since staff should be highly responsive to the guest's demands. A regression test was accomplished to study the relationship between the additional guest requests service and the waiting time.

The regression equation of the plot is: Y= 24.67 – 0.5385x (2)

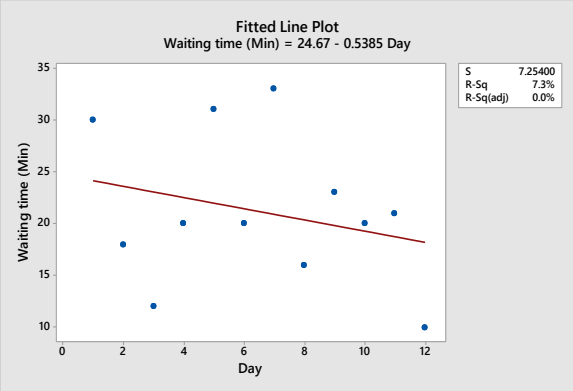

FIGURE 6: REGRESSION LINE.

As displayed in Figure 6 above, there are different durations plotted for the selected sample since the customized services vary depending on the guest's request. However, the standard time for the additional services should not exceed 15 minutes, and it appears that six points (services) exceed the standard time.

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	41.462	41.4615	0.79	0.396
Error	10	526.205	52.6205		
Total	11	567.667			

FIGURE 7: ANALYSIS OF VARIANCE (ANOVA).

Furthermore, there is a negative trend between this type and the waiting time, and the correlation is equal to -0.27, which indicates a weak negative relationship. Also, as indicated in Figure 7, the P-value equals 0.396, which is more than 0.05; hence the decision is failing to reject H0. Therefore, there is no relationship between the additional guest requests and the waiting time.

c) Inventory items order

A regression line has been plotted to study the relationship between the type of the service (Inventory items order) and the waiting time, as shown in Figure 8.

The regression equation of the plot is: Y=24.48–0.2028x (3)

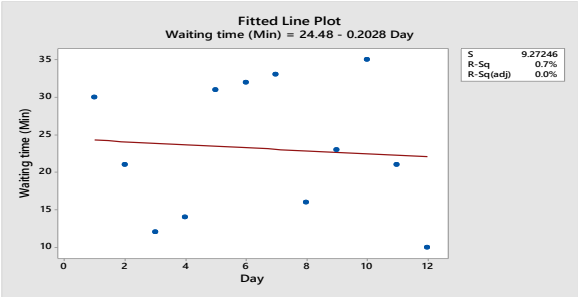

FIGURE 8: REGRESSION LINE.

Figure 8 above illustrates that the waiting time is unstable, and it is due to the different inventory locations (nearest to the rooms) and the availability of the ordered items. Furthermore, the correlation equals -0.082, which indicates that the relationship is a weak negative relationship. Also, as shown in Figure 9 below, the P-value is greater than 0.05. Therefore, the decision fails to reject H0. Hence, there is no relationship between the inventory items order and the waiting time.

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	5.881	5.8811	0.07	0.799
Error	10	859.786	85.9786		
Total	11	865.667			

FIGURE 9: ANALYSIS OF VARIANCE (ANOVA).

The relationship between service types and waiting time is illustrated in Table 2 below.

Service type	Impact on waiting time
Room cleaning type	Strong negative relationship – High effect
Additional guest requests	Weak negative relationship – No effect
Inventory items order	Weak negative relationship – No effect

TABLE 2: THE STANDARD TIME FOR CLEANING SERVICE.

To sum up, managing the different services is crucial, especially room cleaning services since it has the highest impact on the waiting time. Consequently, Stay Bridge Suites hotel should prioritize the consequences of each service type and investigate the reasons behind the long waiting time consumed per staff in the suggested solution.

Room Cleaning Standard Duration Vs. Actual Duration

The previous analysis identified the room cleaning service as the highest contributing service type to the waiting time. Therefore, a random sample of 75 room cleaning services was collected from the data to plot a graph of the actual waiting durations versus the standard waiting durations. Since Stay Bridge Suites hotel has three types of rooms, the service duration depends on each type.

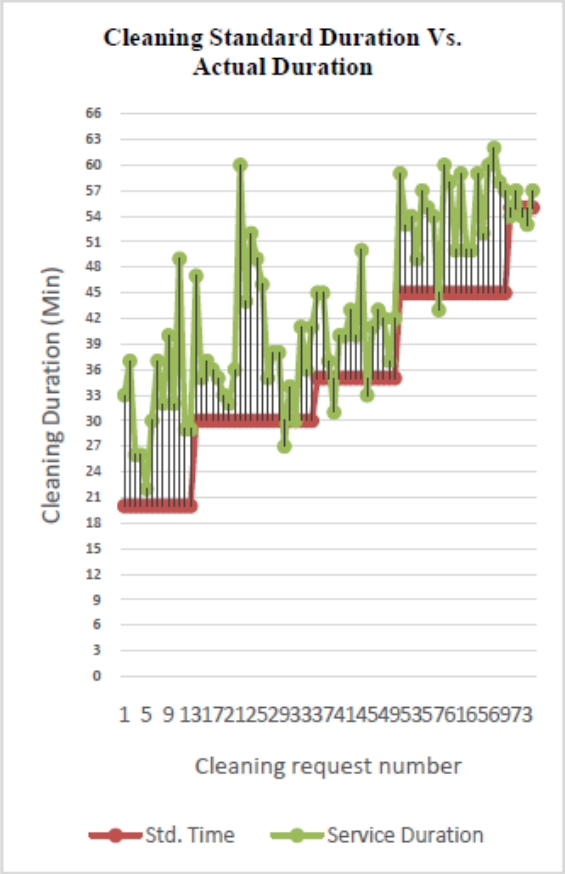

FIGURE 10: CLEANING STANDARD DURATION VS. ACTUAL DURATION.

In Figure 10 above, MS Excel was used to plot the actual duration versus standard durations to observe the deviation of the cleaning waiting time of this sample. For instance, the standard time of the two-bedroom in a daily cleaning type would take 30 minutes to complete the service, while with the improper scheduling, the range deviates between 30 to 55 minutes; therefore, the average for the range is 42 minutes of the service duration, and the increase will be 12 minutes increase.

Seasonal periods VS. Customer waiting time

The Interrelationship diagram in Figure 14 shows that the hotel's seasonal workload is a cause of high guest waiting time. As many hotels become super busy and hectic during seasonal periods such as Ramadan, Eid, National Holiday, etc. Furthermore, as the demand increase for the reservations, the guests will occupy most of the rooms. A poor QoS, high workload, and complicated scheduling process will be resulted since the same number of staff is used during the seasonal periods. In order to verify this, the regression relationship between seasonal periods and guest waiting time was investigated.

The alternative hypothesis to be tested for the regression model is as follows:

H0: There is no relationship between seasonality and the guest's waiting time.

H1: There is a relationship between seasonality and the guest's waiting time.

Figure 11 below shows a regression line of 2-weeks average waiting time durations (in minutes) for room cleaning services to spot the seasonality and find the relationship between the seasonal periods and the guest waiting time for the room cleaning services.

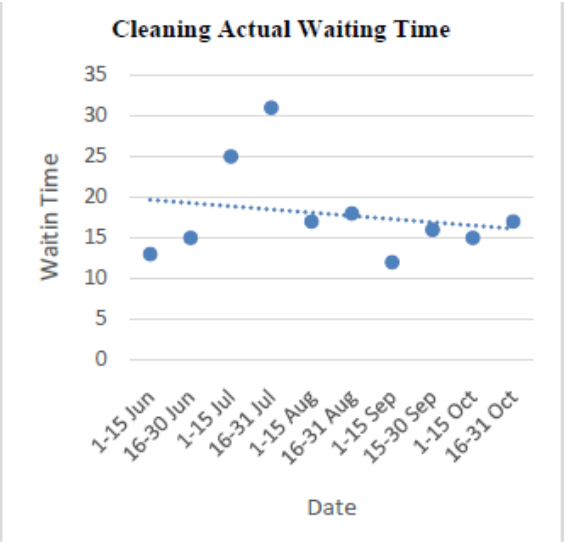

FIGURE 11: REGRESSION LINE.

The regression equation of the line is as follows:

$Y = - 0.394x + 20.067$ (4)

The scatter plot in Figure 11 represents the average cleaning duration's pattern in the original data period, which is five months. The fitted line in Figure 11 indicates that the pattern is somehow constant (has a slight negative slope), except for July month, since there was Eid Al-Adha holiday (14/7/2021 – 24/7/2021), demonstrating that the waiting time rate was significantly higher than usual.

As shown in Figure 12, the Analysis of Variance (ANOVA) indicates that the H0 should be rejected since the P-value is less than the significance level of 0.05. It can be concluded that are seasonal periods affect the guest's waiting time for services.

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	908.7	9	100.967	100.967	0.0000	2.3928
Within Groups	20	20	1			
Total	928.7	29				

FIGURE 12: ANALYSIS OF VARIANCE (ANOVA).

DEVELOPING AN AUTOMATED SCHEDULING SYSTEM

Murakami, Tasan, Gen, and Oyabu (2011) stated that managers require automated assistance in order to make successful human resource allocations (Murakami et al., 2011). By investigating the situation and based on the analysis above, the manual resource allocation is a factor in the increased guest waiting time, thus affecting the quality of housekeeping performance. At Stay Bridge Suites hotel, the HK manager allocates the human resources manually per each service using checklists and WhatsApp messages between the front office and HK department to circulate the guests' requests. Accordingly, to reduce the manual allocation without immediate effect on the HK QoS, an automated web-based system will be developed.

To construct the system, there are certain steps that should be follow as the following:

Step 1: Understanding the current situation and identifying the need.

As mentioned in section II the problem statement.

Step 2: Determine an appropriate system

Since the current situation at the Stay bridge hotel necessitates adopting a proper web-based management system between the HK manager, employees, and front office to reduce waiting time, the Application Express system (APEX) will be utilized. The APEX system is a multi-model relational database management system primarily intended for enterprise grid computing and data warehousing. It offers a software solution for managing database operations, ranging from personal to enterprise-level applications (Monger et al., 2009). Moreover, APEX mainly consists of two major programming languages, Structured Query Language SQL, and JavaScript, familiar to the team members.

Why is APEX used?

a. Because the circumstance necessitates three main stakeholders, the system's access will be restricted for more privacy.

b. The APEX system supports uploading/downloading Excel sheets that are extracted from the hotel's system, which will facilitate the process of scheduling services.

c. It is a world-class technology service that provides the required features to support the current situation (e.g., Database, User interface, algorithms (several programming languages)) all in one more efficient system.

D. Easy to use and adapt to future changes and improvements.

Step 3: Designing the new process

In designing the model, the APEX system features will be utilized extensively to enhance the current process and eliminate non-added value activities. The website consists of three main stakeholders: the HK manager, staff, and the front office. The HK manager can view the requests, needed services, and available staff in each shift. The ability to make auto scheduling. Also, check the schedule of the staff who is available and who is busy, and the details of each staff work. The second stakeholder is the front office, which can check the services' reports and assign the guest's request in the system with more details (e.g., room type, date, time, room number). Another feature is the ability to view the database and the accomplished reports done by staff. The third one is the staff; the staff can access the system to view the assigned tasks ordered by the HK manager set the start time and end time of the service. This will eventually increase the staff's commitment to accomplishing the task in minimum time. Additionally, if a delay occurs, the staff should mention the reason behind this delay so that the HK manager can check and take corrective action later. Figure 13 illustrates the flow chart of the system.

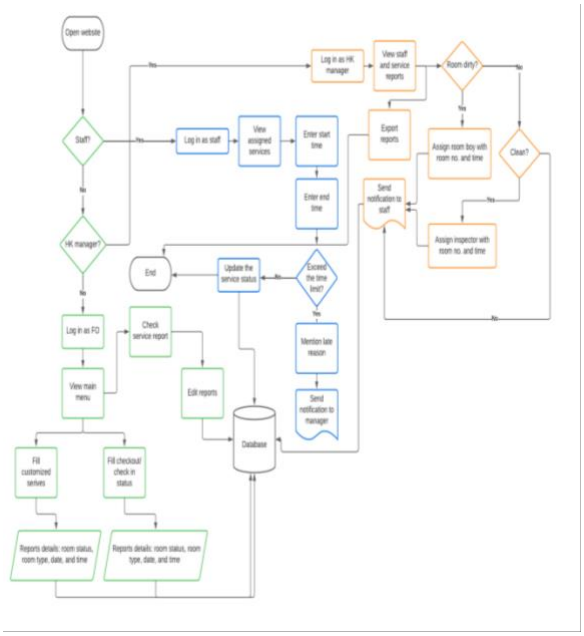

Figure 13: The Flow Chart of the System.

Step 4: Building Database tables

SQL will be the programming language used in the APEX system database because it was the most resilient and not limited the number of entries accepted among the other options. The system mainly needs five connected tables using different relations and dependencies. Figure 14 shows the initially designed tables.

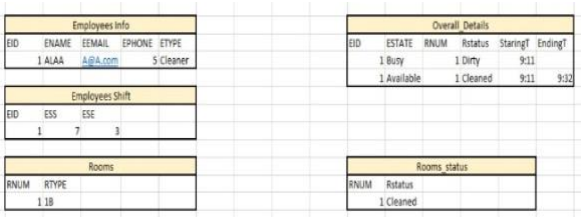

FIGURE 14: THE INITIAL TABLES.

Before the pilot test, the data of the services and guest requests collected from the hotel system, Opera, should be in an Excel sheet in a format that the APEX system can read. So that the system can enter accurate data, avoid misunderstandings of assigned tasks, and have a substantial positive impact on the HK process.

Comparing this plan according to the specifications, it noticed that good coordination between stakeholders, delivering services in less time, and providing more efficient services

are met by this plan. Also, the resource to accomplish the alternative is available. The solution is applicable, feasible, and user-friendly regarding the constraints. It does not violate the hotel's regulation and can be completed within seven months.

CONCLUSION

The hotel will improve itself in several ways by implementing the recommended solutions. The team has successfully identified the root causes of the waiting time, developed criteria to detect staff performance, developed plans to oust the current process and set strategic actions to bypass long waiting times in the future. Furthermore, the solution will assist in be preparing for unexpected reservations while effectively maintaining the hotel's reputation and the level of services provided to customers. Moreover, the Stay Bridge hotel will be impacted by these actions and their competitor, the industry, and local businesses. As a result, high-quality performance value will have a favorable impact in various sectors.

Competing Interests

The authors declare no competing interests

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USD Exchange Rate Cycles Using Developed and Developing Currencies and Risk Factors

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ABSTRACT

This paper predicts the exchange rates cyclical for US dollar [forecast two states for exchange rates; appreciation and depreciation] through using developing and developed currencies along with two risk factors (TED spreads and Inflation). Probit and logit models along with the principal component analysis and factor analysis are used to retain the most powerful components and factors. The empirical findings reveal that risk factors are not key factors in determining the exchange rates' cyclical behavior for the US dollar. Furthermore, the Sterling Pound is the only variable that has a consistent result that is more likely to cause appreciation for the US dollar exchange rate using all types of regressions. In addition, Renminbi shows inconsistent effects between different regressions; using OLS is less likely to cause appreciation for the US dollar exchange rate. By contrast, using Logit and Probity regressions is more likely to cause appreciation for the US dollar exchange rate. On the other hand, principal component analysis and factor analysis show that for all currencies we should retain two components and factors to be able to explain around 80% of the variation in exchange rate cyclical.

Keywords - Exchange Rates Cyclical; Risk Factors; Developing Currencies; Developed Currencies

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INTRODUCTION

Jameel and Stefan (2015) define the exchange rate as "the relative price of one currency in terms of another". In addition, this tool can be considered an essential macroeconomic indicator for competitive power for countries. (Cheung, Chinn, Pascual, & Zhang, 2019) compare the random walk benchmark performance with the performance of a bunch of models in predicting the exchange rates and conclude that co-integrated exists between predicted values and actual exchange rates value, and the elasticity of forecasted values is different than one.

This paper investigates using several developing and developed currencies besides two risk factors (TED spreads and the inflation) in predicting the exchange rates cyclical behavior for US dollar [appreciation (bull), depreciation (bear)] using dynamic probit and logit models. In addition, I use the principal component analysis and factor analysis to know the components and factors that I should retain. The findings affirm that risk factors are not key factors in determining the exchange rates cyclical behavior for US dollar. Moreover, Sterling pound is the only currency that has a consistent result and is more likely to cause appreciation for US dollar exchange rate at all types of regressions. Furthermore, Renminbi shows inconsistent effects. In addition, On the other hand, principal component analysis and factor analysis show that for all currencies we should retain two components and factors to be able to explain around 80% of the variation in the data.

This study contributes to the existing finance literature, where this paper is the first paper that uses the principal component analysis and factor analysis techniques to predict the exchange rates cyclical. Also, the sample of this paper uses vast number of currencies; includes both developed and developing currencies, while the past literature concentrates only on the developed countries.

LITERATURE REVIEW

Forbes, Hjortsoe, & Nenova (2018) use a structural Vector Auto regression (SVAR) to examine the role of exchange rates movements in impacting the inflation rate in UK. (Byrne, Korobilis, & Ribeiro, 2018) test the source of uncertainty in exchange rate forecasting models such as random variations in the data and estimation uncertainty, they find that those furcating model present more accurate results than the drift less random walk

benchmark at all horizons. Moreover, using the benchmark allows to identify the set of related explanatory variables and the tine-varying weights for those explanatory variables. (Chen, Zeng, & Lee, 2018)find consistent mild RMB undervaluation as well as overvaluation across time, all Asian countries in their study have affected by RMB misalignments. (Baghestani & Toledo, 2017) show that there is a directional predictability for the US-Australia (US-UK) exchange rate between (1997–2007) but that does not work for the period (2008–2015) that makes difference between analysts' and random walk forecasts between them. On the other hand, (Tsuchiya & Suehara, 2015) show that for the short-term the exchange direction is not predictable as the long-term where the government keeps its foreign exchange policy over time (Beckmann, Belke, & Kühl, 2011).

HYPOTHESES

H1: The two risk factors with all currencies can predict the exchange rates cyclical behavior for US dollar to be bull (appreciation).

H2: The two risk factors with all currencies can predict the exchange rates cyclical behavior for US dollar to be bear (depreciation).

H3: We will retain all components from our PCA analysis.

H4: We will retain all factors from our factor analysis.

METHODOLOGY, SAMPLE AND DATA

In this study, I examine the predictability of exchange rate cycles for ten exchange rate, Japanese yen (JPY), Indian rupee (INR), Brazilian real (BRL), South African rand (ZAR), Canadian dollar (CAD), new Turkish lira (TRY), Indonesian rupiah (IDR), Chinese yuan (renminbi) (CNY), Australian dollar (AUD), and the British pound (GBP) against the United States dollar (USD). These exchange rates represent a mix of reserve, funding and investment currencies and cover approximately 75% of average daily turnover (BIS, 2010).

The monthly data span from January 2010 to December 2019. The explanatory risk factors, the TED spread, and the inflation. I employ 3-month money market rates for the calculation of TED spreads. The data obtains from DataStream, the FRED (FRB St. Louis) and the OECD. Because I study the behavior of bilateral exchange rates, the US dollar is treated as foreign currency. In a similar fashion I calculate the cross-country differentials by subtracting the US fundamentals (the foreign country) from the domestic fundamentals. For example, the term spread utilized in the model is actually the difference between the domestic

term spread and the US term spread. The cycles, i.e., the bull and bear episodes, have been determined via the Bry and Boschan (1971) algorithm (BBA).

THE MODEL

I use asset price view of the exchange rate, and this currency price shows cyclical patterns, these series of patterns are basically binary events. So that, our model will start with binary modeling framework (binary event), with underlying unobserved process as follows:

$$S_t^* = \alpha + \sum_{h=0}^{q} \beta_h X_{t-h}^{\sim} + u_t \quad \text{Where } u_t \sim \text{i.i.d } (0, \sigma^2) \text{ (1)}$$

Where S_t^*: is the underlying unobserved process?

$X_{t-h}^{\sim}$: is the risk factors vector as cross-country differences (home minus foreign).

Because S_t^* is unobserved we will follow cycles via Bry and Boschan (1971)'s nonparametric algorithm[2] to create the binary variable as follows:

$$S_t = \begin{cases} 1, & if FX market in bear moodat t, \\ 0, & otherwise \end{cases} \text{(2)}$$

Setting u_t as i.i.d in the probit model we will have the followings:

$$\Pr(S_t = 1) = \Phi(\alpha + \sum_{h=0}^{q} \beta_h X_{t-h}^{\sim}) \quad \text{(3)}$$

Where $S_t$represents the exchange rate cycles.

To account for persistence of asset price cycles we add the lagged dummy as exogenous variable, so the dynamic model will be as follows:

$$\Pr(S_t = 1) = \Phi(\alpha + \sum_{h=0}^{q} \beta_h X_{t-h}^{\sim} + \gamma S_{t-1}) \quad \text{(4)}$$

Following the literature as Kauppi and Saikkonen (2008) the lag h should match the forecast horizon. All parameters $(\alpha, \beta_h, \gamma)$ are estimating using the means of the method of the likelihood. After that we will estimate in-sample as Estrella (1998) using Pseudo-R^2. It compares the unconstrained and the constrained models based on the likelihood values, its formula will be as follows:

$$\text{Pseudo-}R^2 = 1 - \left[\left(\frac{\log(L_u)}{Log(lc)}\right)\right]^{-\frac{2Log(lc)}{T}} \text{(5)}$$

To estimate $L_c$we restrict model (4) by assuming $\beta_h = \gamma = 0$as Kauppi and Saikkonen, (2008). However, as (Dueker, 1997) we should start with zero pseudo-R2 value by assuming $\beta_h = 0$ in equation (4)in order to assess the explanatory power and the relevance of the included variable $X^{\sim}$, the resulting statistic can be seen as an incremental pseudo-R2. On the other hand, for out-of-sample forecasts. We will use again Kauppi and Saikkonen (2008) and

use iterated forecasting procedures. Specifically, h periods ahead forecasts can be calculated iteratively as follows:

$$\mathbf{P_{t-h}}(\boldsymbol{S_t = 1}) = \boldsymbol{E_{t-h}}[\boldsymbol{\Phi}(\boldsymbol{\alpha} + \boldsymbol{\tilde{X}_{t-h}}\boldsymbol{\beta} + \boldsymbol{\gamma S_{t-1}})$$

$$= \sum_{y_{t-1} \in \{0,1\}} \mathbf{P_{t-h}}(\boldsymbol{y_{t-1}})\boldsymbol{\Phi}\ (\boldsymbol{\alpha} + \boldsymbol{\tilde{X}_{t-h}}\boldsymbol{\beta} + \boldsymbol{\gamma S_{t-1}}) \quad \textbf{(6)}$$

Where $\mathrm{P}_{t-h}(y_{t-1})$ are the probabilities of (y_{t-1}) to be either zero or one, conditional on information known in the forecast period $t-h$. In addition, to evaluate the out-of-sample forecasts. I assigned the value 1 for appreciation in the US dollar (bull), and the value 0 for depreciation in the US dollar (bear) for the logit and probit models.

Variables Definitions:

US: is the dependent variable and it is a binary variable takes the value 1 for appreciation in the US dollar, and the value 0 for depreciation in the US dollar.

Japan: the cross Japan differentials by subtracting the US fundamentals from the Japanese yen fundamentals.

China: the cross-China differentials by subtracting the US fundamentals from the Renminbi fundamentals.

India: the cross India differentials by subtracting the US fundamentals from the Indian rupee fundamentals.

Brazil: the cross-Brazil differentials by subtracting the US fundamentals from Brazilian real fundamentals.

UK: the cross British differentials by subtracting the US fundamentals from sterling pound fundamentals.

South Africa: the cross-South Africa differentials by subtracting the US fundamentals from South African rand fundamentals.

Canada: the cross Canada differentials by subtracting the US fundamentals from the Canadian dollar fundamentals.

Turkey: the cross-Turkey differentials by subtracting the US fundamentals from new Turkish Lira fundamentals.

Indonesia: the cross Indonesia differentials by subtracting the US fundamentals from Indonesian rupiah fundamentals.

Australia: the cross Australia differentials by subtracting the US fundamentals from Australian dollar fundamentals.

TED spreads: 3-month money market rates.

Inflation: the US inflation rate.

ANALYSIS AND EMPIRICAL RESULTS

Part A: Logit and Probit Models:

Variable	Mean	Std. Dev.	Min	Max
US	0.8	.4016772	0	1
Japan	99.312	13.99505	75.98999	123.955
China	6.500289	.2714907	6.0488	6.9496
India	57.64123	8.448439	44.18	73.3675
Brazil	2.538103	.7515454	1.5328	4.08025
UK	0.6698428	.0610084	.58803	.81719
South Africa	10.49793	2.692045	6.6745	16.38914
Canada	1.149463	.1336954	.94355	1.4093
Turkey	2.433962	1.0114351	8505	15216.5
Indonesia	11391.48	1985.65	0	1.09405
Australia	0.8369769	. 1978366	0	1.09405
TEDspreads	0.3181667	.5039407	.01	2.75
Inflation	229.4201	10.4215	211.398	247.91

Table1: Descriptive statistics for all variables.

From the previous table we can notice that for 10-years monthly data we have 120 observations, Japan and Inflation have the highest standard deviation of 13.99505 and 10.4215 respectively. Furthermore, the only binary variable is the dependent variable (US) which tells if the US dollar is in appreciation (bull) or depreciation (bear), we can notice that from the maximum and minimum values of this variable from the previous table.

Country	OLS Coefficients	Probit Coefficient	Logit Coefficient
Japan	.003	-.071	-.115
China	$-.657^{*}$	9.494^{*}	15.02^{*}
India	.0114	.216	.381
Brazil	$.466^{*}$	-.160	-.026
UK	6.809^{*}	85.7^{*}	145.4^{*}
South Africa	-.0209	.498	.537
Canada	-2.028	-36.2^{*}	-59.1
Turkey	-.118	7.7	12.2
Indonesia	.00003	.0004	.0009
Australia	-.031	1.27	2.07^{*}
TEDspreads	$-.066^{*}$	2.43	4.21
Inflation	.0222	-.164	-.286

* Indicates significance at the 10% level.

Table 2: OLS, Probit, and Logit Regressions

From the OLS regression the R-squared = 0.4305 which means the independent variables explain about 43% of the variation in the US exchange rate appreciation and depreciation, while the Adj R-squared = 0.3661.On the other hand, we just have four significant independent variables at 10% level, three currencies (Renminbi, Brazilian real, Sterling pound) and one risk factor (Inflation). The negative coefficient for Renminbi means that Renminbi exchange rate is less likely to cause appreciation for US dollar exchange rate. A positive coefficient signs for both Brazilian real and Sterling pound mean that both of these currencies' exchange rates are more likely to cause appreciation for US dollar exchange rate. Finally, for the only significant risk factor (Inflation) a positive coefficient means that inflation is more likely to cause appreciation for US dollar exchange rate. From Probit regression, we have that observations are 119, the Pseudo R2 = 0.6330, while here we have

different results than OLS regression where we do not have any significant risk factor, but we have three significant currencies at 10% level (Renminbi, Sterling pound, Canadian dollar), for both Renminbi and Sterling pound they have positive coefficients mean that both of these currencies' exchange rates are more likely to cause appreciation for US dollar exchange rate. While the opposite is true for Canadian dollar which is less likely to cause appreciation for US dollar exchange rate. From Logit regression, we have those observations are 119, Pseudo R2 = 0.6279 and it is close to Probit Pseudo R square, for the independent variables we can interpret them as the Probit table without any difference.

Country	OLS marginal effects	OLS average marginal effect	Logit marginal effects at the mean	Logit average marginal effect	Probit marginal effects at the mean	Probit average marginal effect
Japan	.003	.003	-2.31	-.006	-4.51	-.007
China	-.657	-.657	3.06	.867	6.05	.953
India	.011	.011	7.78	.022	1.38	.021
Brazil	.466	.466	-5.33	-.001	-1.02	-.016
UK	6.8	6.8	.0297	8.393	5.47	8.61
South Africa	-.0209	-.021	1.10	.031	3.17	.0499
Canada	-2.01	-2.02	-.001	-3.41	-2.31	-3.63
Turkey	-.118	-.118	2.50	.708	4.91	.772
Indonesia	.003	.003	1.97	.005	3.13	.004
Australia	-.030	-.030	4.22	.119	8.13	.128
TEDspreads	-.0655	-.065	8.60	.243	1.55	.244
Inflation	.0222	.0222	-5.83	-.0164	-1.05	-.0165

Table 3: Marginal effects (at the mean and average marginal effect)

Table 3 shows that the marginal effects at the mean and the average marginal effects for all types of regression (OLS, Logit, and Probit) for all independent variables, as we mentioned for OLS regression, the significant variables at 10% level are Renminbi, Brazilian real, Sterling pound and risk factor (Inflation). In addition, here we can interpret the magnitude of the coefficient and not just the sign, for Renminbi is about 65% less likely to cause appreciation for US dollar exchange rate, for both Brazilian real and Sterling pound are about 46.5% and 6 are more likely to cause appreciation for US dollar exchange rate respectively. Inflation just about 2% is more likely to cause appreciation for US dollar

exchange rate. Regarding Probit and Logit regressions we also can interpret the magnitude as well as the sign of the coefficients.

Variable	Obs	Mean	Std. Dev.	Min	Max
US	120	0.8	.4016772	0	1
Plogit	119	0.7983193	.3227403	.0007844	1
PProbit	119	0.7970599	.3253431	6.57e-06	1
POLS	119	0.7983193	.2643987	.1546851	1.302336

Table4: Predicted probabilities

We can see from table4 that the probability of mean of being US dollar in appreciation is .8 in the sample, while the probability of the logit mean is .7983193, and .7970599 is the probability of Probit. Finally, the probability of OLS is .7983193. In conclusion, the probabilities are very close in all regressions.

Classified	**D**	**D**	**Total**
+	90	6	96
-	5	18	23
Total	95	24	119
Correctly Classified		90.76%	

Table 5: Percent correctly predicted values for Logit Model

From table 5 we can notice the true and false predictions, and the most important thing is the correctly classified is 90.76% which is perfect.

Part B: Principal Component Analysis and Factor Analysis:

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	7.91767	6.17927	0.6598	0.6598
Comp2	1.7384	.877678	0.1449	0.8047
Comp3	.860723	.129392	0.0717	0.8764
Comp4	.731331	.390659	0.0609	0.9373
Comp5	.340672	.19732	0.0284	0.9657
Comp6	.143351	.0288546	0.0119	0.9777
Comp7	.114497	.0520773	0.0095	0.9872
Comp8	.0624194	.0304385	0.0052	0.9924
Comp9	.0319809	.000460679	0.0027	0.9951
Comp10	.0315203	.0158203	0.0026	0.9977
Comp11	.0156999	.00396686	0.0013	0.9990
Comp12	.0117331	.	0.0010	1.0000

Table 6: Principal Component Analysis (PCA)

In table 6 we have 12 components in the first column, the first component has a very high Eigenvalue of about 7.92, this component by itself explains about 66% of the variation in data, from the third column we can see the differences between the Eigenvalue of one component to the other. Additionally, the second component explains about 14.5% of the variation in data, from the last column in the table we can see that first 2 components explain more than 80% of the variation in data. We will retain the first 2 components because the best rule is to retain components that have Eigenvalue exceeds one.

Variable	Comp1	Comp2	Unexplained
Japan	0.3061	-0.1759	.2046
China	0.0553	0.6806	.1706
India	0.3236	-0.2552	.05764
Brazil	0.3467	-0.0488	.04428
UK	0.2754	0.2795	.2635
South Africa	0.3412	-0.1271	.05037
Canada	0.3349	0.1092	.09118
Turkey	0.3187	0.0679	.1878
Indonesia	0.3453	-0.0636	.04868
Australia	-0.1931	-0.2161	.6236
TEDspreads	0.1199	0.4965	.4576
Inflation	-0.3185	0.1741	.1441

Table 7: Principal components (eigenvectors)

Table7 retain just the first 2 components, they can explain together about 80% of the variation in Japan, while about 83% of the variation in China, about 43% of the variation in India, for Brazil about 56%, about 74% for UK, half of the variation in South Africa data can be explained by the retain 2 components, about 91% of the variation in Canada, about 92% of the variation in Turkey, more than 51% of the variation in Indonesia, just about 38% of the variation in Australia data can be explained by the retained components, about 55% of the variation in TED spreads, and about 86% of the variation in Inflation can be explained by the retained components as well. In the first column of the table, we can see the original variables,

from the last column we can notice the percentage of the unexplained variations. In conclusion, the retain 2 components have a strong power of explaining the variation in the data of the original variables, the rule is to retain just the components that have higher than one eigenvalue.

Country	KMO
Japan	0.9225
China	0.4842
India	0.8668
Brazil	0.8786
UK	0.8417
South Africa	0.8685
Canada	0.8496
Turkey	0.7691
Indonesia	0.8655
Australia	0.9451
TEDspreads	0.4927
Inflation	0.8272
Overall	0.8373

Table 8: KMO Measure of Sampling Adequacy

Notice in table 8 that the KMO values are really very high, the rule says for more than 0.50 KMO means we are justified in using principal component analysis. We are justified with 10 variables except China and TED spreads, but they still very close to 0.50 KMO

which means we have high correlations between variables and that is very good indicator for estimating the principal component analysis. Furthermore, the overall KMO is about 84% which is perfect.

Component	Eigenvalue	Difference	Proportion	Cumulative
Factor1	7.84784	6.29552	0.7441	0.7441
Factor2	1.55232	0.96804	0.1472	0.8913
Factor3	0.58427	0.02164	0.0554	0.9467
Factor4	0.56264	0.47791	0.0533	1.0001
Factor5	0.08473	0.04297	0.0080	1.0081
Factor6	0.04177	0.03499	0.0040	1.0121
Factor7	0.00678	0.01184	0.0006	1.0127
Factor8	-0.00506	0.01279	-0.0005	1.0122
Factor9	-0.01785	0.00778	-0.0017	1.0105
Factor10	-0.02562	0.00892	-0.0024	1.0081
Factor11	-0.03454	0.01638	-0.0033	1.0048
Factor12	-0.05092	.	-0.0048	1.0000

Table 9: Factor Analysis

In table 9 we have 12 factors in the first column, the first factor has a very high Eigenvalue of about 7.85, this factor by itself explains about 74% of the variation in data, from the third column we can see the differences between the Eigenvalue of one factor to the other. Additionally, the second component explains about 14.72% of the variation in data, from the last column in the table we can see that first 2 factors explain more than 89% of the variation in data. We will retain the first 2 factors because the best rule is to retain factors that have Eigenvalue exceeds one.

Variable	Factor1	Factor2	Uniqueness
Japan	0.8517	-0.2221	0.2252
China	0.1499	0.8371	0.2768
India	0.9109	-0.3333	0.0591
Brazil	0.9762	-0.0551	0.0439
UK	0.7649	0.3774	0.2725
South Africa	0.9613	-0.1644	0.0489
Canada	0.9421	0.1577	0.0875
Turkey	0.8970	0.1140	0.1823
Indonesia	0.9735	-0.0756	0.0466
Australia	-0.5063	-0.2031	0.7024
TEDspreads	0.3292	0.6219	0.5049
Inflation	-0.8962	0.2169	0.1497

Table 10: Factor Loadings Matrix

We can observe in table 10 that we again retain just two factors, because they have the best explanation power for variation in data. In addition, the last column is the uniqueness of these factors versus the commonality in explaining variation, the uniqueness is reversely related to commonality which can be calculated as commonality = 1- uniqueness value. Uniqueness is the error term of variable that is not explained by the variable and the commonality is the opposite which is explained by the variable.

CONCLUSION

This paper investigates using several developing and developed currencies besides two risk factors (TED spreads and the inflation) to predict the exchange rates cyclical behavior for US dollar [appreciation (bull), depreciation (bear)] using dynamic probit and logit models. In addition, I use the principal component analysis and factor analysis to know the components and factors that I should retain. The empirical findings reveal that risk factors are not key factors in determining the exchange rates cyclical behavior for US dollar. In addition, Sterling pound is the only variable which has a consistent result which is more likely to cause appreciation for US dollar exchange rate using all types of regressions. These finding are important for the federal bank to decide which currencies and factors can appreciate or depreciate the USD exchange rate cycles. It could be helpful for other researchers who are interested in exchange rate forecasting.

Competing Interests

The authors declare no competing interests.

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The Impact of Crypto Currencies on the Economy and The Financial Industry

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ABSTRACT

This paper is based on the discussion about the crypto currencies and its impact on the financial industry. However, the adoption of cryptocurrencies is a different matter because right now Bitcoins is considered as for wealthy, developed and tech-savvy cultures. Based on the analysis about the points of differences of the currency a country's profile can be developed who are more likely to adopt Bitcoin. Crypto currencies are considered a potential solution against accessibility, exchange, fraud, and inflation. Moreover, the prices are considerably increasing because the demand for core goods is growing rapidly relative to supply. As per the analysis the fiat currency system is considered as the main reason for future inflation however it will not cause any significant problem in the overall financial industry. The growing demand for housing is also increasing the price of lumber which also increased in the prices of wood. Consequently, all the related goodwill becomes more expensive following the trickle through the economy. Moreover, the asset market also contributes considerably to inflation. An increase in the price of certain commodities incentivizes the people who are producing those commodities. In this regard, the producers withhold the supply of those commodities which eventually results in increased prices. Furthermore, inflation can also be caused by the supply shock like the interruption in oil supply to Southern US caused by Katrina devastated. It caused fluctuation dramatically in the real exchange rates instead of producing desired results. The fluctuation also triggers the development of three asymmetries in the exchange market. The first factor that comes into play is loss aversion which means that the losing side will suffer more loss vocally and acutely as compared to the less vocal winning side during the time of depreciation or appreciation. Hence, the fiscal policy will experience more disturbances.

Keywords -Economy, Crypto Currency, Bitcoin, Financial, Banks.

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INTRODUCTION

Cryptocurrencies are referred to as digital cash. Cryptocurrencies is an online payment system and digital currency that involves encryption techniques for the generation and regulation of currency units along. It also involves the funds' transfer verification. Cryptocurrencies operate independently without connecting with a central bank. The words blockchain and Bitcoin can cause confusion as it might be used to refer any of the three parts of the concept that includes the client and protocol that affect the transaction, the blockchain technology and the actual cryptocurrencies that is digital money.

Moreover, these terminologies can also be referred to the overall concept of cryptocurrencies. It is similar to calling the Pay Pal as the Internet Pay Pal which is used to run the operations of PayPal that is the Pay Pal currency transfer. These terms are also used interchangeably in the Cryptocurrency industry because in the technology stack the industry is still in the shaping process to become an established layer.

Cryptocurrencies also referred to as the creation of rewards as a result of the computation processing work which is also known as mining. In mining, the computing power of the users is offered for the verification and record-keeping of the payments in the public ledger. In exchange for newly created Bitcoin and transaction fees, the companies or individuals are involved in the mining. However, other than mining, Cryptocurrencies can also be acquired through the exchange of products, services, and fiat money like any other currency. Moreover, Cryptocurrencies can receive and sent electronically but with an optional transaction fee. The transactional fee is paid by using the wallet software on the web application, personal computer, or mobile device (Clavin et al., 2020).

CRYPTOCURRENCIES IN THE FUTURE ECONOMY

The level of volatility is very high for the most popular Cryptocurrencies. The cost of Cryptocurrencies is pegged against fiat currencies and precious metals. These projects will be effective and promising only if it is accepted by the state institutions and are implemented within the legal boundaries. Likewise, when Cryptocurrencies fulfill these criteria, they will be more successful and effective.

Furthermore, CoinLoan will use the Cryptocurrencies as the collateral and also allow working with the Cryptocurrencies similar to fiat funds. The platforms like CoinLoan use Cryptocurrencies to enable financial holders to acquire and save virtual currency. Moreover, with the development of these blockchain technologies of interest will be forced out gradually, it is expected that the non-competitive financial institutes offering higher rates (O'SULLIVAN, 2018).

It is expected with the trend of blockchain technology, and Cryptocurrencies will be fully developed in a positive manner within the next 5-10 years. Following this, more countries are accepted to legalize these digital currencies as well as adopt the latest blockchain technologies in the accounting systems, financial registers, real estate, medical, education, and other routine processes. In this way, more transparent, safe and fully authorized infrastructure will be established to make life easier and convenient. Following the potential of Cryptocurrencies, more companies and start-ups prefer Initial Token Offering/ Initial Coin Offering (ITO, ICO) for raising funds instead of conventional ways of initial public offerings (IPO). In the comparison of IPO, ICO is considered a more transparent, modern, and fast way of transferring financial resources (Darlington III, 2014).

During the past year, an increase of 13% has been witnessed in the total capitalization of the Cryptocurrency market and the growth is continued. Following, the continuous growth of Cryptocurrencies the interest is also increasing equally and therefore; they are intended to make considerable investments in Cryptocurrencies. In the coming years, the secured assets of Cryptocurrencies are going to become an integral part of the ecosystem of the crypto world similar to the real estate collaterals. Moreover, the whole system of Cryptocurrencies is very convenient, quick and profitable for investors. Using the platform of CoinLoan the holders of Cryptocurrencies can pursue everyday needs while living on the spot. In this way, they don’t have to sell these profitable investment assets even if they need the money urgently.

Moreover, Cryptocurrencies can also be borrowed as secure assets for up to 5years. However, according to the trend, the cost of Cryptocurrencies will be increased during this time. In this way, the cost of financial resources will be compensated what is secured on the Cryptocurrencies; moreover, the sale of crypto assets also ensures higher profits for the investors.

Following the growth potential of digital currencies, the state's interest in blockchain technologies has increased considerably. In this regard, a real estate register has been replaced by the blockchain in many countries. All the transaction of blockchain is fully automated which makes it easier to evaluate these assets immediately (Ølnes & Jansen, 2017).

CRYPTOCURRENCIES' IMPACTS ON THE FINANCIAL INDUSTRY

Bitcoin has revolutionary potential. According to the vision of OG's Cryptocurrencies are accepted to interest to financial institutes instead of industrial replacement. In this article, the author has discussed that the distributed ledger system has the potential to handle the three main banking functions including clearing of transfer, storage of physical money and loaning whereas, the banks can play a larger role in managing the financial industry based on Cryptocurrencies. Bitcoin cannot handle the very financial transaction around the world and is included it in the blockchain. Therefore, a more efficient secondary level is required for the payment system. Hence, likewise, the finalized time for transaction time for Bitcoin will be imperial for the large and medium value purchases. Therefore, this problem can be solved with eth Bitcoin-backed banks. They will play the same role the banks played before currency nationalization.

However, banks can be various police and varying interest rates. Some of them can be 100% Bitcoin back, and the others can use fractional reserve (Davidson, De Filippi, & Potts, 2018).

Monetary control is the greatest value that is brought to the financial industry by the blockchain. With the technological advancements, the dependency on the banks will be reduced in order to keep your money save. With the blockchain, it is nearly impossible to hack or manipulate as it stored the money in an immutable ledger. Hence, while using blockchain technology, the investor has to focus on the open-source code of the coin instead of any corruptible institute. Moreover, Cryptocurrencies ensure that the no can free the funds of the investor or dictate how to use the money. (Guo & Liang, 2016). Cryptocurrencies give full control to the investors for their funds, wallets and private key and this control is considered to rule number one in Cryptocurrencies. Moreover, while using the blockchain, no middleman is required for any transaction. Following, its positive impact the upcoming Cryptocurrencies are also committed to using this feature. Moreover, the big plays of the industry including Litecoin and Bitcoin are also conducting transactions without a middleman.

Lack of fess and almost instantaneous time of the transaction of Nano, it has achieved some popularity. Instead of using the typical blockchain Nano is using the directed acyclic graph algorithm. Moreover, the increasing number of people also increased the efficiency of the network. In peer-to-peer payments, Cryptocurrencies might have a favorable and positive future. Request Network is another project that is expanding is an operation beyond peer-to-peer payments by using the blockchain interface like PayPal.

These platforms enable the users to acquire money transfer services without third-party intermediaries. These platforms have created a comprehensive mind map including all the possible ways of changing the financial industry. The team of these platforms is intended to fix payments, and point-of-sale. Most considerably Cryptocurrencies are intended to provide banking services without using banks. In this regard, Cryptocurrencies will provide these services up to 2 billion people on a global level (Lin, Chung, Shayo, & Beer, 2019).

The upcoming Cryptocurrencies are intended to provide banking services to the unbanked individual in a more affordable manner. In this regard, Steller enables the financial institutes to offer low-cost accounts along with the most favorable rates of interest. In this way, even in developing countries, business owners will be able to get an easy loan. It will also stimulate the global financial industry. However, exchanging Cryptocurrencies is having unwanted effects on the unbanked nations' financial industries. For instance, the initiative of improving and transforming the economic landscape of Uganda has been announced by Binance. In this regard, Binance is intended to use blockchain for providing youth employment opportunities in Uganda (Swan, 2015).

LITERATURE REVIEW

Cryptocurrencies are considered the silver bullet for the government of America, and digital record-keeping is achieving universal acceptance. Moreover, with the growing trend of blockchain-related technologies, the future of legal binding is also changing considerably.

Following this, more transparency is required for the partnership with the American government. However, vulnerability and confusion associated with blockchain technologies are creating a considerable impact on economic and technological validity. Many specialists, analysts, and legislative organizations are conducting frequent discussions on the potential use of these technologies and their implications.

IMPACT ON STOCK MARKET

According to (Lee, 2015) among all the current financial and economic issues Cryptocurrencies have become the most trending topic of discussion. E-Commerce has achieved rapid growth since the crisis of Dotcom. With the ever-growing internet users, the number of online shoppers and online sale is rapidly increasing which is also transforming the retail industry. After the Dotcom bubble burst, some serious safety concerns were raised about online shopping and the use of credit cards. However, following the growth potential of e-commerce internet retailers have made massively oversized investments in e-commerce. The financial institutes are using Cryptocurrencies as the trusted third party for making electronic payments. However, Cryptocurrencies was working slowly because of the control of financial institutes, despite the satisfactory results of Cryptocurrencies for most of the transaction. Future prices of Cryptocurrencies are not foreseeable in an efficient market whereas the variations are random hence the price of Cryptocurrencies are following a random walk. Highly important randomness tests are applied to test the efficiency of Bitcoin while avoiding spurious results to capture Bitcoin's dynamics (Lee, 2015).

For some people, trading in the market of Cryptocurrencies fulfills the same purpose as traditional stock market trading does. The main reasons behind the investment in the traditional stock market are motivation, ownership and profit maximization and Cryptocurrency market also fulfills all three reasons. Therefore, investors can use Cryptocurrencies to go global.

IMPACT ON CURRENCY

Extance has described that in the context of the crypto economy the currency could mean different things instead of the basic meaning of serving as the payment mechanism in exchange of good and services (Extance, 2015). Moreover, in the crypto economy, the money is also referred to as something valuable that can be developed usefully in some situations. It can also be described as a value unit that can be used and earned in certain economic systems. Cryptocurrencies are similar to the idea of app coin, currency or token that allows access to different economic systems. The continued cultural and market presence of Bitcoin prompts many people to ask questions about the functions and effects of Cryptocurrencies on the current monetary policies. It is expected that the digital currency has the potential to affect the central

banks' abilities to manage the goals of national policy. On the other hand, some analysts believed that the central banks could use this opportunity and gain considerable advantages if they issue their own national Cryptocurrencies. However, in the near future, these outcomes don't see achievable (Extance, 2015).

METHODOLOGY

This writing is based on descriptive research. Descriptive research uses qualitative methods for the collection of qualitative data. The core purpose of this study is to create comprehensive knowledge about the theories and practices about the factors having the potential to influence the future of digital currencies. Specifically, the impact of Cryptocurrencies on the financial industry and economy will be accessed. This study is based on secondary research as it is intended to identify the factors of the association with digital currency. These factors have the potential to influence the scope and future of digital currencies.

Another objective associated with this research is to access the growth potential of Cryptocurrencies along with their future impact on the financial industry and the global economy. Moreover, it is also intended to discover the ways to regulate digital currencies in an effective manner. Furthermore, the reliability of the currency will also be accessed to understand that to what extent the investment in digital currency is valuable. The nature of the aims and objectives of this research is qualitative. Therefore, it required considerable discussion about the positive and negative impact of Cryptocurrencies in the future.

The research is secondary in nature, therefore, to fulfill the research objectives the factors having the potential to change the future of Cryptocurrencies are extracted. All the factors are related to the digital currency's future. These factors include the illegal use of digital currency specifically Cryptocurrencies in the financial industry. To access the association and make clear analysis the previous research will be considered in the literature review section. The previous researchers have the competencies to provide accurate associations between these factors and digital currencies. Moreover, internet sources including media, blogs, journal articles, websites, and books will also be used to create an in-depth understanding of the topic.

FINDINGS

Cryptocurrencies ensured a wide range of safe and secured monetary options for the people of all classes whereas, the government-backed currencies of the world are not offering such monetary options. However, currently, Cryptocurrencies exist in the small corner of the global financial market as an experimental appearance. Therefore, currently, Cryptocurrencies are unable to restrain the monetary policy of the central banks. However, Cryptocurrencies provide a required escape to people living in uncertain and desperate economic situations. In order to the monetary administration, few central banks are also taking an interest in the implementation of blockchain technologies. However, in such a situation, it will remove their managing abilities of the national money supply. There are chances that the distributed ledger technologies can be adopted by central banks to improve their settlement services or they can buy Cryptocurrencies as part of the reserve portfolios of the bank (O'SULLIVAN, 2018).

However, it is a long process to make stock investments outside the home country. Cryptocurrencies provide an easy alternative to this across countries' stock investments. Hence it can be beneficial for the people wanted to have global investments. ICO has replaced IPO, and it is also preferred over traditional methods of investment due to its effortless investment opportunities.

The ICO bench has confirmed that Cryptocurrencies have considerably disrupted the stock markets. Investors have an opinion that the prices of digital currencies can surge in no time similar to Bitcoins. Initially, it was quite easy to ignore Cryptocurrencies in all their aspects and merits, but it is expected that soon things will be changed. Cryptocurrencies will be considered as an alternative to traditional ways of investments (Thumar, Dhdhat, Chaudhari, Hadiya, & Ahir, 2016).

CONCLUSION

Based on the above mentioned discussion it is concluded that the upcoming Cryptocurrencies have a positive impact on the financial industry. However, the response of the financial industry towards Cryptocurrencies varies around the globe and over time. In this

writing, the response of banks is viewed with respect to the growing craze of Cryptocurrencies. It is important to understand the current, and future response of banks toward Cryptocurrencies as the banks are controlling large institutional capital and leverage. The shift towards decentralized currency systems is raising lots of questions about the future economy. Due to the limited supply, Cryptocurrencies will become deflationary currencies similar to the tokens that exist in the supply due to mistyped transaction requestors' loss of private keys. No one knows about the future impact of the completely deflationary and decentralized financial system. Following this uncertain future associated with Cryptocurrencies majority of companies and consumer around the world trust the central banks and prefers to use fiat currency in order to ensure economic stability.

Competing Interests

The author declares no competing interests

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