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CAN AUTOMATIONCUT MANY JOBS? AUTOMATION THE FUTURE THAT THE GLOBE REVOLVES

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Abstract
This paper begins with how automation is threating the present and future generations by recruitment freezing, and its impact on ASEAN-5 countries especially and also provides the need of man vs. machine integration in creating a better future.

Automation is an idea that has mostly inspired science fiction writers and Hollywood based movies, writers and futurologists over a period of century. Now automation is no longer viewed as an fiction, where across the globe majority of the companies are using robots in the production process, managing inventories and to carry out the other core business functions. Due, to this Automation process there also exists some benefits like reducing the wastage, changing the pace and scope of work processes etc, and on the negative side the disadvantage is the cut in huge employment across various sectors across the globe. Automation of activities will enable businesses to improve performance, by reducing errors and improving quality and speed, and in some cases achieving outcomes that go beyond human capabilities.

The data and views presented in this paper is purely secondary in nature collected from various research reports, magazines, articles etc. The basic objective of the researcher is to present his opinion on automation and its impact on employments in near coming future across various sectors. In this paper an attempt was also made how wide range of technologies could automate workplace activities, and also the impact on global workforce. This work does not define what the new activities and occupations that will be developed will be, nor does it analyze in depth how the economic gains of automation will be distributed or provide specific policy recommendations for governments.

Keywords: Automation, Employment, Machines.

1. Introduction

The age where currently majority of the organizations is looking for is automation inside the workplace. Automation is the technique, method or a system of operating or controlling a process by highly automatic means, as by the use of electronic devices, robots and thereby reducing the human intervention to minimum.**According to a article by titled Beyond Automation Thomas H. Davenport & Julia Kirby, HBR (June 2015):** opined that half of today's jobs will get vanished and making the future of younger generation into a big dilemma. The statement made above is especially true because now automation is coming in the place of manual workforce and thereby knowledge work, is gaining its momentum in the form of artificial intelligence. Here, Knowledge work means what? It represents where the concern employee applies all his/her KSA's (knowledge, skill & abilities) in the assigned job or a position. Below figure illustrates the three eras of automation.

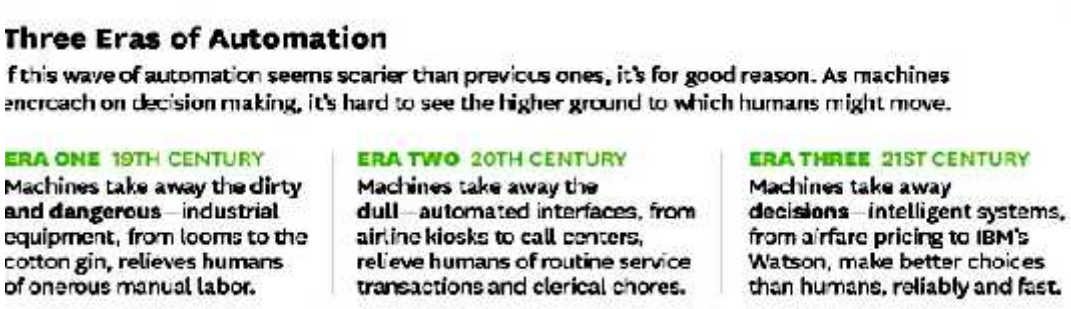


Figure – 1: The Three Eras of Automation
Source: Beyond Automation Thomas H. Davenport & Julia Kirby, HBR (June 2015).

According to the report of intelligence automation entering the business world by Patrick Laurent, ThibaultChollet, Elsa Herzberg: expressed that automation with the combination of Artificial – Intelligence will be the biggest revolution in business across the globe. Previously the use of Robotics and Automation is largely done in the manufacturing sector slowly decreasing the human interventions and now this advancement also entered in other sectors also by introducing automation in low valued added activities. The following figure gives a better understanding between the current technology vs. artificial intelligence.

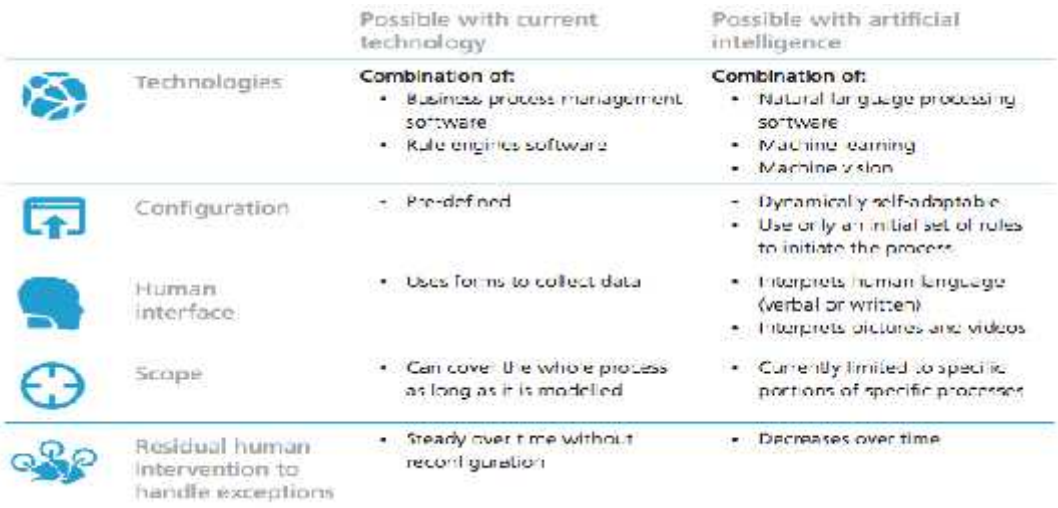


Figure 2: Possibilities and limitations of current—AI technologies compared with more traditional technics
Source: According to the report of intelligence automation entering the business world by Patrick Laurent, ThibaultChollet, Elsa Herzberg.

Note: Amazon in December 2016 launched a store without cashiers, Amazon Go.
To, understand in a better way of Automation advantage inside the workplace the following example illustrates a hypothetical future state of automation in a grocery store.

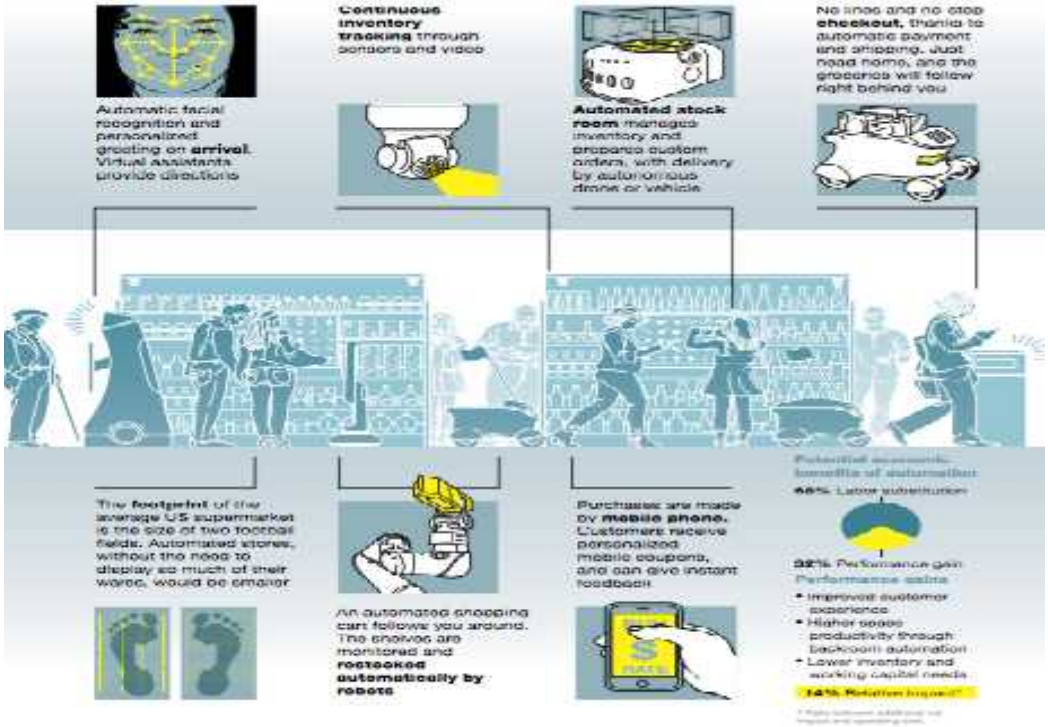


Figure 3: Hypothetical Amazon GO future state of automation in a grocery store.
Source: A future that works: automation, employment, and productivity January 2017, MC Kinsey Global Institute.

2. Literature Review

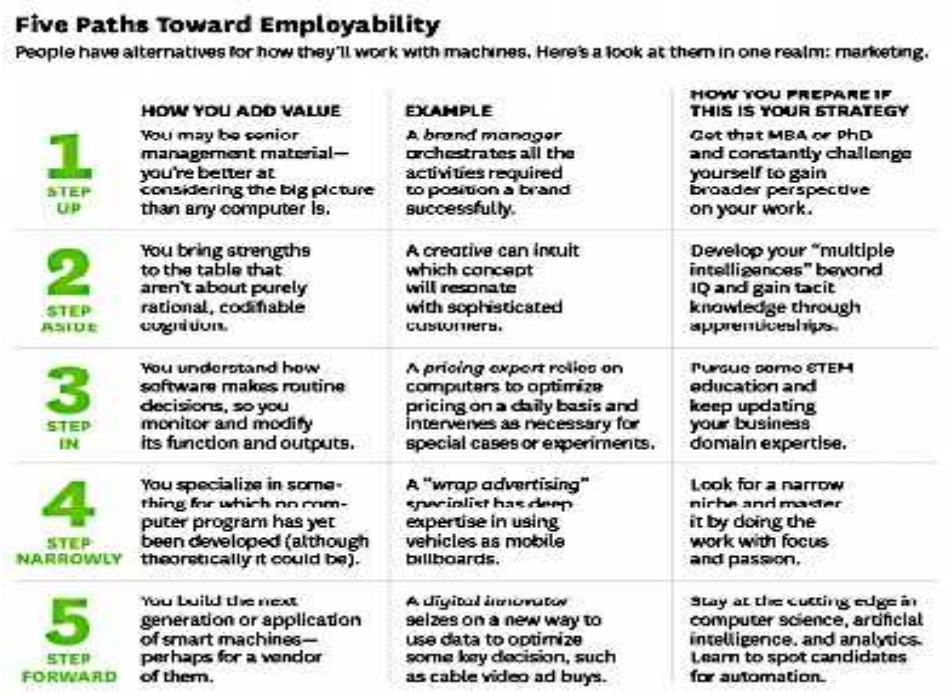
In an article titled The Robots are coming to Take Your Job in Knowledge Wharton, (August 30, 2016) by Joe Mc Kendrick: Expressed that the main consequences really worse the globe is where automation really squeezes the employment cuts in every sector starting from truck drivers, journalists and computer programmers etc. And, majority of the organizations freezes its recruitment process. But on the flip side of the coin there is no need of worry of automation because

not all the sectors were affected out of it like Automobile, Electronic and Electrical industries etc. Some, of the research studies conducted in this area reveled that through proper integration of human power to automation would result in increasing the country's economic scenario.

According to Mr. Vinnie Mirchandani's latest book titled Silicon Collar: an optimistic perspective on humans, machines and jobs: expressed that why many Technology oriented people are so pessimistic and talking on the negative coin of automation rather than being optimistic.The biggest concern in being pessimistic in nature because they completely failed the positive benefits reaped out of automation. **To, quote a example:** The so called East Asian countries like Japan, China, Hong-Kong, North & South Korea has achieved higher Human Development Index and developed status because of automation on a continuous cycle.

"Machines will become more of our colleagues, and we should not be so worried about their increased presence in the future," a famous quote from the book indicated above Vinnie says. Interestingly Vinnie has taken Japanese culture as an example where heavy automation takes place in each and every sector, which has resulted high successes. More importantly, when man and machine collaborate for excellence, then people pays tribute," Vinnie opined.

According to an article by titled Beyond Automation Thomas H. Davenport & Julia Kirby, HBR (June 2015): Smart machines can be our partners and collaborators in creative problem solving. Assuming that like fiction movies that every aspect of the job is performed by the robots and advanced, and making the role of humans to minimum. But one thing we have to remember is the technology is always created by the mighty brains of humansonly; it is how surely we can linkage an effective collaboration between the human manpower and machines through Augmentation Process. From an augmentation perspective, people might renegotiate their relationship with machines and realign their contributions in five ways. The following figure illustrates the five ways where people can collaboratively work with the machines.



Five Paths Toward Employability

People have alternatives for how they'll work with machines. Here's a look at them in one realm: marketing.

	HOW YOU ADD VALUE	EXAMPLE	HOW YOU PREPARE IF THIS IS YOUR STRATEGY
1 STEP UP	You may be senior management material—you're better at considering the big picture than any computer is.	A *brand manager* orchestrates all the activities required to position a brand successfully.	Get that MBA or PhD and constantly challenge yourself to gain broader perspective on your work.
2 STEP ASIDE	You bring strengths to the table that aren't about purely rational, codifiable cognition.	A creative can intuit which concept will resonate with sophisticated customers.	Develop your "multiple intelligences" beyond IQ and gain tacit knowledge through apprenticeships.
3 STEP IN	You understand how software makes routine decisions, so you monitor and modify its function and outputs.	A *pricing expert* relies on computers to optimize pricing on a daily basis and intervenes as necessary for special cases or experiments.	Pursue some STEM education and keep updating your business domain expertise.
4 STEP NARROWLY	You specialize in something for which no computer program has yet been developed (although theoretically it could be).	A "*wrap advertising*" *specialist* has deep expertise in using vehicles as mobile billboards.	Look for a narrow niche and master it by doing the work with focus and passion.
5 STEP FORWARD	You build the next generation or application of smart machines—perhaps for a vendor of them.	A *digital innovator* seizes on a new way to use data to optimize some key decision, such as cable video ad buys.	Stay at the cutting edge in computer science, artificial intelligence, and analytics. Learn to spot candidates for automation.

Figure 4: Five Paths of Employability.
Source: Beyond Automation Thomas H. Davenport & Julia Kirby, HBR (June 2015).

3. The Impact of Automation in Asean Countries

As per ASEAN IN TRANSFORMATION The future of jobs at risk of automation a report by Jae-Hee Chang and Phu Huynh (July – 2016) ILO: The Association of Southeast Asian Nations **(ASEAN)** is a particularly viewed a highly automation region for investigating technology and its effects on the workplace. The ten ASEAN Member States includes are: Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam.But, for my study only five 5 ASEAN Countries were selected.

As a region totally together, all the **ASEAN - States** have a combined economy of US$2.6 trillion (forming the seventh largest economy in the world) and a population exceeding 632 million. Investments in the region are increasing due to an increasingly better educated workforce, emerging consumer markets especially in the field of Automobiles and Electronic goods, and there by expanding its infrastructure facilities and networking relationships across the Globe with other Nations at an rapid rate. Going back years ago all these ASEAN economies are agricultural based, slowly

Furthermore, **ASEAN** has deepened its trade integration in the global market and made shifts from agriculture to manufacturing and other services. These transitions have resulted in higher living standards, remarkable poverty reduction and a growing middle class workforce. In terms of technology, ASEAN is a very technology -savvy region. Some statistics is indicated below. Mobile phone penetration has grown approximately 110 per cent with approximately 350 million mobile subscriptions added from 2008 to 2013, placing the region behind India and China. Internet users also grew at 16 per cent annually over the years.

Note: ASEAN Enterprises are viewed as technology adopters rather than innovators.

> For example:**"The United States is already looking into automated sewing and new technologies that bring us closer to the realities of inserting fabric at one-end of a machine and receiving a completed garment at the other end. This will alter the entire sector and create opportunities to take investment back to the States, possibly within the next five years."**
> Source: **YuttanaSilpsarnvitch, Secretary General, Thai Garment Manufacturers Association: Statement at ILO Experts Roundtable Consultation Meeting on Technology Transforming People and Jobs in ASEAN, (Singapore, 18 Nov. 2015).**

Some of the key: Findings due to high Automation in ASEAN Countries as per ASEAN TRANSFORMATION REPORT-July, 2016 is indicated below:

- Nearly three in five jobs face a high risk due to automation. If, we take the ASEAN 5 (Cambodia, Philippines, Thailand, Indonesia and Vietnam) nearly 56 percent of all employment has a higher threat due to automation process. The following figure illustrates the risk due to automation process in these **ASEAN 5 Countries**.

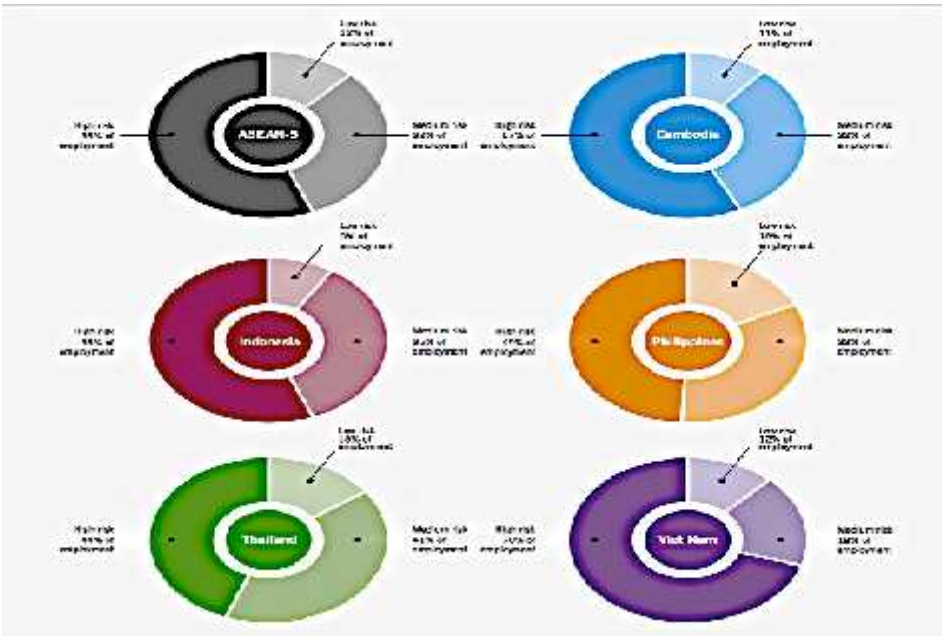


Figure – 5: Distribution of Employment at risk of automation.

Source: As per ASEAN IN TRANSFORMATION The future of jobs at risk of automation a report by Jae-Hee Chang and Phu Huynh (July – 2016) ILO.

From, the above key finding the following table 1 & 2 illustrates the total percentage of employment cuts region wise and occupational sector wise effect due to automation in ASEAN – 5 Countries.

Table 1: Shows the % employment cuts due to automation in ASEAN-5.

S. no	ASEAN-5 countries	% of workers at high risk of automation in ASEAN-5
1	Cambodia	57 %
2	Philippines	49%
3	Thailand	44%
4	Indonesia	56%
5	Vietnam	70%

Source: As per ASEAN IN TRANSFORMATION The future of jobs at risk of automation a report by Jae-Hee Chang and Phu Huynh (July – 2016) ILO.

Table 2: Shows the occupational effect due to automation process in ASEAN-5.

S. no	**ASEAN-5 countries**	**Occupation sector wise effect**
1	Cambodia	Sewing machine operators (89% risk)
2.	Philippines	Fishery workers (5,80,000), waiters (5,74,000), carpenters (5,25,000) and office cleaners (4,63,000)
3.	Thailand	Sales assistants (1 million), food service counter attendents (6,06,000), office clerks and accounting professionals (8,00,000)
4.	Indonesia	Gardeners (9.1 million), shop sales persons (1.8 million) and tailors (1.1 million)
5.	Vietnam	Shop sales assistants (2.1 million), garden workers (1.1 million) and sewing machine operators (7,70,000)

Source: As per ASEAN IN TRANSFORMATION The future of jobs at risk of automation a report by Jae-Hee Chang and Phu Huynh (July – 2016) ILO.

- **Key: Finding 1: In ASEAN -5 Countries** Technologies will shape the future in manufacturing and service sectors in these countries. While manufacturing in ASEAN's developing economies primarily focused on lower value products, computer and electronics. The total employed in manufacturing sector is around 10% in Thailand and 15% in Philippines. And coming to motor vehicle production employs nearly 7 per cent of all manufacturing wageworkers in Thailand. The predominant key occupation is the computer and electronics industry are electronic equipment assemblers, accounting for nearly 58 per cent and 70 per cent of all salaried employment in the sector in Thailand and the Philippines, respectively. These jobs face an extremely high probability of automation (92 per cent) given the rapid penetration and advancements in robotic technologies.

Note: Compared with manufacturing, the services sector in the ASEAN-5 faces considerably lower automation risks.

- **Key: Finding 2:** Coming to the Women workers category with lesser education below secondary grade and workers employed in lower-wage occupations are more likely to be affected more in number.By verifying the statistics it is noted that the highest odds for women are in the Philippines and Vietnam, accounting nearly to 2.3 to 2.4 times as high when compared to male. In Indonesia and Thailand, women are 50 to 60 percent more likely to occupy a high-risk job compared to men. In Cambodia, also women face the same as the countries indicated above when compared to male. In four of the countries, young workers aged 15–24 are slightly more susceptible to having an occupation at high risk relative to adult workers, although the age-based disparity is considerably lower than the gaps by sex. In the case of Thailand, which is the only country of the five countries in the ASEAN region that is already facing an ageing demographic profile, adult workers are more vulnerable than youth.

So, basing on the above data presented through key – findings the following table illustrates leading occupation by employment in categories facing high and low risk due to Automation.

Table 3: Leading occupations by employment in categories of low and high risk of automation.

Low-risk occupations	Employment (000)	Risk of automation (%)	High-risk occupations	Employment (000)	Risk of automation (%)
Cambodia					
1. Shop keepers	144.5	16.0	1. Stall and market salespersons	999.0	94.0
2. Handicraft workers in wood and basketry	78.7	3.5	2. Crop farm labourers	616.2	87.0
3. Primary school teachers	75.1	8.7	3. Sewing machine operators	446.9	89.0
4. Secondary education teachers	61.6	0.8	4. Livestock and dairy producers	263.2	76.0
5. Police officers	44.4	22.4	5. Building construction labourers	242.7	80.0
6. Traditional chiefs and heads of village	39.3	1.5	6. Bakers, pastry-cooks and confectionery makers	92.4	89.0
7. Construction supervisors	27.5	17.0	7. Street food salespersons	69.6	90.0
8. Senior government officials	23.1	5.9	8. Bricklayers and related workers	78.6	82.0
9. Manufacturing supervisors	23.0	1.5	9. Forestry and related workers	60.6	75.2
10. Generalist medical practitioners	22.9	0.4	10. Tailors, dressmakers, furriers and hatters	68.0	84.0
Indonesia					
1. Primary education teaching professionals	1 869.9	8.7	1. Stall and market salespersons	14 323.6	90.3
2. Other personal services workers n.e.c.*	1 130.8	27.9	2. Gardeners, horticultural and nursery growers	9 105.1	81.0
3. Junior secondary education teaching professionals	690.6	7.1	3. Market-oriented crop and animal producers	5 940.1	76.0
4. Basketry weavers and brush makers	670.7	3.5	4. Subsistence agricultural and fishery workers	2 558.3	85.3
5. Builders, traditional materials	409.0	7.1	5. Building construction labourers	2 130.1	80.0
6. Senior secondary education teaching professionals	485.7	7.1	6. Street food vendors	1 851.7	90.0
7. Pre-primary education teaching professionals	448.3	7.9	7. Shop salespersons and demonstrators	1 771.3	75.8
8. Other teaching professionals n.e.c.	397.4	8.5	8. Other office clerks	1 652.4	98.5
9. General managers n.e.c.	263.7	9.0	9. Bricklayers and stonemasons	1 476.7	84.0
10. General managers in wholesale and retail trade	249.4	16.0	10. Tailors, dressmakers and hatters	1 119.3	84.0
Philippines					
1. General managers in wholesale and retail trade	2 424.4	16.0	1. Farmhands and labourers	6 868.9	89.0
2. General elementary education teachers	539.5	8.7	2. Shop salespersons and demonstrators	2 154.4	75.8
3. General managers in manufacturing	271.3	14.0	3. Market and sidewalk stall vendors	887.5	92.0
4. General managers of business services	311.9	13.4	4. Building construction labourers	869.2	80.0
5. General managers of restaurants and hotels	278.3	4.3	5. Fishery labourers and helpers	579.5	83.0
6. Traditional chiefs and heads of villages	240.0	1.5	6. Waiters, waitresses and bartenders	574.0	83.5
7. General secondary education teachers	235.7	7.1	7. Carpenters and joiners	525.2	72.0
8. Professional nurses	191.1	3.7	8. Hand launderers and pressers	485.3	81.0
9. Police officers	140.4	22.4	9. Helpers and cleaners in offices and hotels	463.0	71.2
10. Building and related electricians	105.6	15.0	10. Receptionists and information clerks	463.0	78.0
Thailand					
1. Shopkeepers	1 165.6	16.0	1. Subsistence crop farmers	3 306.3	87.0
2. Retail and wholesale trade managers	440.6	16.0	2. Shop sales assistants	991.5	95.0
3. Primary school teachers	385.4	8.7	3. Stall and market salespersons	851.3	94.0
4. Construction managers	277.7	7.1	4. Crop farm labourers	796.9	87.0
5. Secondary education teachers	207.0	0.8	5. Livestock and dairy producers	671.4	76.0
6. Building and related electricians	195.5	15.0	6. Food service counter attendants	623.8	93.0
7. Traditional chiefs and heads of villages	186.2	1.5	7. Cooks	606.6	73.0
8. Handicraft workers in wood and basketry	172.1	3.5	8. Building construction labourers	561.6	80.0
9. Restaurant managers	152.9	8.3	9. General office clerks	427.7	97.0
10. Finance managers	145.8	6.9	10. Accounting associate professionals	403.3	98.0
Viet Nam					
1. House builders	1 000.2	7.1	1. Crop farm labourers	12 770.4	87.0
2. Secondary school education teachers	338.0	0.8	2. Stall and market salespersons	3 852.6	94.0
3. Primary school teachers	249.7	8.7	3. Livestock farm labourers	2 668.0	87.0
4. Primary school teachers, medium-sized schools	207.0	8.7	4. Shop sales assistants	2 120.7	95.0
5. Handicraft workers in wood and basketry	196.5	3.5	5. Garden and horticultural labourers	1 005.6	96.0
6. Early childhood teachers	165.4	7.9	6. Subsistence crop farmers	930.9	87.0
7. High School education teachers	162.3	0.8	7. Building construction labourers	911.1	80.0
8. Handicraft workers n.e.c.	161.2	3.5	8. Fishery and aquaculture labourers	842.6	83.0
9. Nursing associate professionals	158.0	5.8	9. Sewing machine operators	766.2	89.0
10. Management and organisation analysts	153.6	7.1	10. Livestock and dairy producers	693.6	76.0

Source**:** Based on Cambodia Labour Force Survey (2012), Indonesia Labour Force Survey (Aug. 2010), Philippines Labour Force Survey (Oct. 2013), Thailand Labour Force Survey (Q3 2013) and Viet Nam Labour Force Survey (2013), applying the Frey and Osborne (2013) methodology at the four-digit occupation level.

4. Integration of Human Workforce with Automation

According to Harvard Political Review an article published by Melody Guan (August, 26 2015), Expressed his view that definitely in near coming future advanced automation with the collaboration of artificial intelligence will totally show an impact on the society as well as the future generations leading to almost ban on the employment opportunities. But, the reality everyone should accept is the advanced automation will definitely transform the workforce in profound and inevitable ways.

But, majority of the experts opined that due to advanced automation in the workplace will definitely squeezes the cuts in manpower employed, but the implication that the jobs across the globe will disappear is totally false added by University of Pennsylvania School of Engineering and Applied Science dean Vijay Kumar.

According to World Economic Forum, Shift towards an integrated digital and human workforce, (2014), Higher the automation higher will the cost incurred which transforms the machines to be more intelligent than human in the terms of productivity. Here, the biggest question arises is who is productive is the machine or human. Definitely the answer will be the mutual combination of the two will be winning formula for enhancing the productivity level.**Another famous quote given by Erik Brynjolfsson Director MIT USA** " Humans must adapt to collaborate with Machines, and when that collaboration happens, the end result is stronger".

For – Example: Amazon now operates one of the world's largest fleets of industrial robots in its warehouses, where humans and robots work side-by-side, capable of fulfilling orders up to 70% faster than a non-automated warehouse. While robots perform picking and delivery, human workers spend more time on overall process improvements such as directing lower-volume products to be stored in a more remote area.

According to Monica Eaton – Cardone in her article titled: The Modern Workforce: Balancing Automation and Human Labor: It, is true that automation definitely reaps benefits out of it by enhancing the productivity, taking businesses to next level reducing error rate etc, but anything that is implemented should not wipe away the opportunities of other race, and moreover with technology we can do anything is not the correct answer in present era. When compared Humans with Machines both has unique characteristics where humans are more versatile in nature and has dynamic skill- sets, and on the other hand machines are very good at on doing a specific thing. Automation means not eliminating the people it is making things, businesses smarter in providing better service and overall satisfaction.It is true that technology can create distance and increase friction between workers and businesses; it can also cause problems between businesses and customers.
When customers have no direct human-to-human involvement and engagement, they lose sight of the fact that real people are involved in the buying process. This, becomes very difficult for customers to feel in-touch with or get passionate about a business when they do not perceive any kind of human involvement.

5. Conclusion

So, from the study indicated above it is evident automation definitely enhances the productivity and provides better services than expected. But, the debate is really can automation with the help of Artificial Intelligence is benefited by troubling the human workforce. Discussed above ASEAN-5 Scenario where heavy automation is taking place especially in the fields of manufacturing and electronics impacted the job – cuts heavily. Jobs in those ASEAN Countries especially low – skilled jobs, where the work is repetitive in nature is highly affected.When coming to India's position automation is not threating as much as other developing nations, but in near coming future job – cuts are likely to be happen in various sectors.

And, finally it is a known fact that Machines may show superiority in performing the multiple tasks at a time, but they can never replace humans and can never think independently and take decisions. It is through mutual involvement of Man and Machine we can create better products and offer better services in various businesses. And finally, modernization or any technological advancement, or any innovations happened must be only for the survival of human mankind and their welfare, but not for its destruction and sufferings of next generations.

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