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A COMPETENCY MODEL FOR HOSPITALITY INDUSTRY IN THE PHILIPPINES IN 2030: TOWARDS EMBRACING THE 4TH INDUSTRIAL REVOLUTION

UM MODELO DE COMPETÊNCIAS PARA O SETOR DE HOSPITALIDADE NAS FILIPINAS EM 2030: RUMO À ADOÇÃO DA 4ª REVOLUÇÃO INDUSTRIAL

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Abstract
Purpose – The ability to identify the skills and competencies required for tomorrow's industry leaders are essential for companies that hope to remain competitive in hospitality industry. It is significant to determine the future skills and competencies to be more relevant, competitive, and adaptive to the fast-changing environment. Methodology/Design/Approach – This study is descriptive research that utilized the mixed-method of both quantitative and qualitative approach. The participants of the study were groups of stakeholders in the hospitality industry, the academe, and representatives from the government regulating agencies. Findings – The results of the study identified key skills and competencies required in 2030 and the jobs necessary in this period. The new drivers were also identified in the development of skills set for workforce and resiliency on the hospitality industry in 2030. This led to the development of competency model for Hospitality Industry in the Philippines in 2030. Originality of the research – The developed competency model could be the focal point of the hospitality industry itself on their requirements both in the adoption of technology and usage of human resources in 2030 and beyond.

Keywords: Competencies. Competency Model. New Drivers. Hospitality Industry. 4th Industrial Revolution.

Resumo
Objetivo – A capacidade de identificar as habilidades e competências necessárias para os futuros líderes do setor é essencial para as empresas que desejam manter-se competitivas no setor de hospitalidade. É importante determinar quais serão as habilidades e competências futuras para que se tornem mais relevantes, competitivas e adaptáveis a um ambiente em rápida mudança. Metodologia/Concepção/Abordagem – Este estudo é uma pesquisa descritiva que utilizou a metodologia mista, combinando abordagens quantitativa e qualitativa. Os participantes do estudo foram grupos de partes interessadas do setor de hospitalidade, da academia e representantes de órgãos reguladores do governo. Resultados – Os resultados do estudo identificaram as principais habilidades e competências necessárias em 2030 e os cargos necessários nesse período. Também foram identificados novos fatores impulsionadores no desenvolvimento do conjunto de habilidades da força de trabalho e da resiliência do setor de hospitalidade em 2030. Isso levou ao desenvolvimento de um modelo de competências para o setor de hospitalidade nas Filipinas em 2030. Originalidade da pesquisa – O modelo de competências desenvolvido pode ser o ponto central do próprio setor de hospitalidade em relação às suas necessidades, tanto na adoção de tecnologia quanto no uso de recursos humanos em 2030 e além.

Palavras-chave: *Competências. Modelo de Competências. Novos Fatores Impulsionadores. Setor de Hospitalidade. 4ª Revolução Industrial.*

1 INTRODUCTION

The hospitality industry in the Philippines has shown a remarkable growth and resilience rebounding strongly from the pandemic's challenges. Its success stems from a captivating blend of rich culture, stunning landscapes, and a pleasant climate, attracting both local and international tourists. The industry is also considered as a labor-intensive industry that is why they need to understand the skills and competencies typically required of those employed in the industry to ensure that they hire the right people with the right sets of skills. Workforce in the hospitality industry must meet the required competencies to be effective in the position.

The hospitality and tourism industries are changing dramatically as a consequence of the application of information technology to managerial and strategic and operational task. This is stimulated by the competition within the industry as well as the development of new, creative methods and practices (Deri et. al., 2024). The future of work is undergoing rapid transformation, driven by technological advancements, sustainability imperatives, and shifting demographics. Innovations in artificial intelligence (AI), robotics, and energy technologies are redefining industries, creating both challenges and opportunities for the workforce. Concurrently, economic pressures, such as rising costs of living and global slowdowns, underscore the importance of resilience and adaptability in navigating this evolving landscape. These changes demand proactive strategies from educators, policymakers, and industries to ensure the workforce remains competitive and prepared for the complexities of the Fourth Industrial Revolution and beyond (WEF, 2025).

Today’s tourism and hospitality industry is changing significantly with the application of information technology in its fundamental to strategic activities (Khatri, 2019; Lasi *et al*., 2014). The concept of 4IR is very useful for the hospitality sector in terms customer satisfaction; for example, technological applications may include offering personalized service, efficient supply chains, smart working environments, and highly customized services at lower costs (Lasi, 2014). Digitalization and the need of adopting online modes of interaction were frequently noted in Kaushal and Srivastava’s (2021) research. Similar research recommended the use of artificial intelligence (AI) and robotics in the industry (e.g., Ivanov & Webster, 2018; Webster & Ivanov, 2019; Yang et. al.,

2020). The inclusion of robotics in various tourism and hospitality operations (e.g., guidance, cleaning, kitchens, airports, hotels, deliveries) are expected to become commonplace (Ivanov & Webster, 2018).

In the era of the COVID-19 pandemic the use of digital technology has become increasingly important in minimizing human interaction in efforts to reduce the spread of the coronavirus (Lau, 2020). The COVID-19 pandemic has caused more businesses to turn to digital applications to enable a ‘work-anywhere’ economy and mitigate the risk in daily operations.

Therefore, this changing landscape contributed to the fact the hospitality industry worldwide should be adaptive in the era of the Fourth Industrial Revolution. According to Fwaya (2018), the 4IR, also known as Industry 4.0, is indeed here with us. Schwab (2016) defines 4IR as "technological revolution that will fundamentally alter the way we live, work and relate to one another." (p.349). It is characterized by the emergence of technological breakthroughs in artificial intelligence, automation and robotics, connectivity with mobile devices, and access to data and knowledge.

This study looks ahead to 2030 by analyzing the future competencies for a career in hospitality industry considering the Industry 4.0 concept and the adaptation to sustainable development goals and its impact to the hospitality industry. The purpose of this study is to prepare the hospitality employers as well as the educational providers on the competencies might look like in 2030 and the skills that will be required under these conditions. There is a need both to respond to and to anticipate changes. The act of anticipation, assessing trends and potential future changes, reveals new potential and strategic choices in the present. Foresight methods and concepts offer a framework for structuring analysis and discussion on the future of jobs and skills.

2 LITERATURE REVIEW

2.1 Projected competencies needed by future hospitality industry workers

It is essential to identify the skills and competencies required for tomorrow’s industry leaders for companies that hope to remain competitive. Some firms, such as Marriott International and Choice have made identifying leadership competencies a

priority. Identifying appropriate competencies helps senior managers in selecting, developing, and coaching future leaders, as well as mapping career paths and planning management succession (Chung-Herrer, Enz, & Lankau 2003). They identified 99 hospitality competencies in a survey that was faxed worldwide to 735 senior level industry executives at various hotel companies.

Pompa (2015) identified three main set of skills that are most critical to future success: (1) Learning and innovation skills; (2) Information, media and technology skills; and (3) Life and career skills. Aring (2015) pointed out that the following skills are necessary in enhancing the competitiveness and employability of future workers: English language proficiency; computer related skills; technical skills; time management; interpersonal communication; creative thinking; teamwork; and leadership.

The study of Suh, et.al, (2012) entitled "Important competency requirements for managers in the hospitality industry" shows the top ten competencies required for future success in the industry according to hospitality managers were the following: Listening skills, Tolerance for change, Guest interaction, Openness to new ideas, Personal integrity, Interaction with superiors, Peer interaction, Leadership, Interaction with subordinates, and Staff training and Knowledge in cultural differences. The study also shows the additional future competencies needed by managers in the hospitality industry and this includes: problem-solving; new technology; innovation; politeness with employees; detail orientation; patience; revenue/asset management; delegation; team building; responsibility; adaptability; meeting deadlines; and dedication.

The World Economic Forum for ASEAN (2017) identified the following skills needed by the future work: being able to capture, translate and interpret data through data analytics and machine learning; empathy; humility; attentiveness; open mindedness; patience; persistence; emotional intelligence; social and behavioral understanding; leadership qualities of purpose; effective decision-making. In the article, Workforce of the future: The competing forces shaping 2030, shows the following skills and attributes: adaptability; problem solving; collaboration skills; emotional intelligence; creativity and innovation; leadership skills; digital skills; risk management skills; STEM skills; and entrepreneurial skills.

Johanson (2010) presented "Revealing key competencies of hospitality graduates demanded by Industry: A 25 years review". Based from the findings of his study, it only

reveals that the knowledge of basic functional areas of management such as training, recruiting, motivating, communication and customer satisfaction were identified as important. In F & B operations, the areas identified as important within F & B management included more specific food preparation related skills, such as knowledge of ingredients, sauces and stocks, and basic culinary production processes.

2.2 The fourth industrial revolution

The Fourth Industrial Revolution according to Marr (2018) describes the exponential changes to the way we live, work and relate to one another due to the adoption of cyber-physical systems, the Internet of Things and the Internet of Systems. This revolution is expected to impact all disciplines, industries, and economies. The Fourth Industrial Revolution is disrupting almost every industry in every country and creating massive change in a non-linear way at unprecedented speed (Marr, 2018). According to the World Economic Forum, it is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres, collectively referred to as cyber-physical systems. It is marked by emerging technology breakthroughs in a number of fields, including robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, the Industrial Internet of Things (IoT), fifth-generation wireless technologies (5G), additive manufacturing/3D printing and fully autonomous vehicles.

Digital transformation has become crucial in the hospitality industry for enhancing operational efficiency and improving the guest experience. Elmohandes, Nirmeen, and Csobán, Katalin (2022), reviewed various approaches and the effectiveness of Industry 4.0 in achieving sustainable development goals within the sector. Similarly, Anwar *et al*. (2024) found that contactless digital technologies, which gained prominence during the COVID-19 pandemic, positively influence guests' perceptions of safety and comfort. However, challenges such as system integration, staff training, and initial investment costs were identified. The study concluded that digital transformation significantly boosts hotel efficiency, guest satisfaction, and competitiveness in an increasingly competitive market. It strongly recommends the continuous adoption of digital technologies to ensure the future relevance of the hospitality industry.

Klaus Schwab, the executive chairman of the World Economic Forum, has associated it with the "second machine age" (Schwab, 2017) in terms of the effects of digitization and artificial intelligence (AI) on the global economy, but added a broader role for advances in biological technologies. These technologies are disrupting almost every industry in every country. And the breadth and depth of these changes herald the transformation of entire systems of production, management, and governance. Schwab sees as part of this revolution "emerging technology breakthroughs" in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3D printing, quantum computing and nanotechnology. The fourth wave of the industrial revolution is expected to see the heavy implementation of several emerging technologies with a high potential of disruptive effects (Ab Rahman, Airini; *et al*. 2017).

As the Fourth Industrial Revolution unfolds, companies are seeking to harness new and emerging technologies to reach higher levels of efficiency of production and consumption, expand into new markets, and compete on new products for a global consumer base composed increasingly of digital natives. Yet in order to harness the transformative potential of the Fourth Industrial Revolution, business leaders across all industries and regions will increasingly be called upon to formulate a comprehensive workforce strategy ready to meet the challenges of this new era of accelerating change and innovation (World Economic Forum, 2018).

2.3 Present and future of hotels

The hotel industry is one the largest, most prominent industries today. Today's generation consists of different demographics which we categorize into the following categories. There are the Baby Boomers, the Millennials, and the incoming Generation Z. The baby boomers were born during the post World War II baby boom approximately between the years of 1946 - 1964. The Millennials are a generation of children born between 1982 - 1995 and they consist of over 81 million children. And finally Generation Z, also known as Centennials, were born 1996 or after. Each demographic group requires different levels of service making it hard for the hotel industry to keep up. The Millennials grew up in a world that was exposed to technology and they tend to prefer personalized experiences, while the Baby Boomers prefer a familiar and standard experience. The

Baby Boomers are continuing to retire and enjoy their free time away from work, while the Millennials are young, in their prime years, about to start making a full-time salary.

With the growing number of millennials, hotels must find new and inventive ways to capture these new generation of customers by combining the right amount of design, technology, and personalization. According to Porreca (2017), it requires a heavy number of technologic advancements to capture this large customer segment.

Few hospitality firms have taken the risk and decided to add robotics and Artificial Intelligence units to their hotel service. Through the integration of Artificial Intelligence in hotels today, service is improved, speed is improved, and customer satisfaction is improved. For hotels, customer service is so important therefore anything that increases this is going to benefit that hotel service. The generation today has become extremely impatient meaning that faster speeds are important to customers.

Booth (2016) of Marriott International mentioned, that the benefits of Artificial Intelligence in the hospitality industry talking about how they will impact the associates. According to him, "The associate experience will also be greatly impacted. In addition to the change in the traditional roles and responsibilities that robotics will bring to hotel operations, associates that remain will naturally bring their lens of the consumer A.I. experience to their work tasks, tools and data. This, along with increasing personalization expectations by guests, will drive a bottom-up demand for more intelligent data and subsequent improvement of tools for the associates to use.

Artificial Intelligence will have a significant impact on the hospitality industry. Although some companies are still reluctant to change, there are many potential benefits and opportunities for growth such as higher employee and customer satisfaction, speed, efficiency, and customer retention (Porreca. 2017).

In the article "Hotel Industry 4.0. Leveraging digitization to attract guests and improve efficiency" by Berger (2016), have identified 19 Possible Digital Initiatives for the Hotel Industry that should be tailored to guests (guest groups) and implemented: such as 1. Revenue management that draws on external data sources; 2. Internal (web-based) communication tool for staff; 3. Online check-in/check-out (via smartphone app or website); 4. Self-service check-in/check-out (via a dedicated terminal in the lobby); 5. App to open/lock room doors; 6. Service robot in reception; 7. Service robot for baggage storage; 8. Service robot for baggage transportation; 9. Adaptation of media content for

various channels; 10. Online room selection; 11. Regular newsletters for different target groups; 12. "Smart mirrors"/digital display boards; 13. Presentation of offerings via webcam; 14. Messaging app for hotel guests; 15. Mobile digital concierge; 16. Real-time feedback app; 17. App for direct communication with hotel staff; 18. Ground plan app for navigation; and 19. Locally-based push services.

2.4 Future of jobs

There are different trends that will shape the jobs of the future and these includes: global integration; technological innovation; an ageing population; collaboration and cross disciplinarity; increased participation of women in the labor force; continued economic shift to Asia, scarcity of natural resources; migration. One of the key sectors covered where these trends will have impact is in the hospitality and tourism.

Jacques *et al*. (2026) analyzed the likelihood of automation across four hospitality occupations—namely, chambermaids, chefs/cooks, receptionists, and waiters/waitresses—by examining the skills required for each role. Their findings suggest that the probability of automation for these jobs is moderate in the short term and increases to a medium level in the long term.

Pompa (2015) affirmed that the workforce is changing, both with the continuing youth bulge and an ageing population. Accompanying that change is a looming skills mismatch, where employers and employees lack the skills necessary for today's jobs. Emerging sectors and technological innovation are changing the global workforce landscape. The adaptability of institutions, the private sector, employees and policy makers will determine their success. Collaborative efforts among actors are necessary to ensure that the future generation can meet and overcome unemployment and skills gaps.

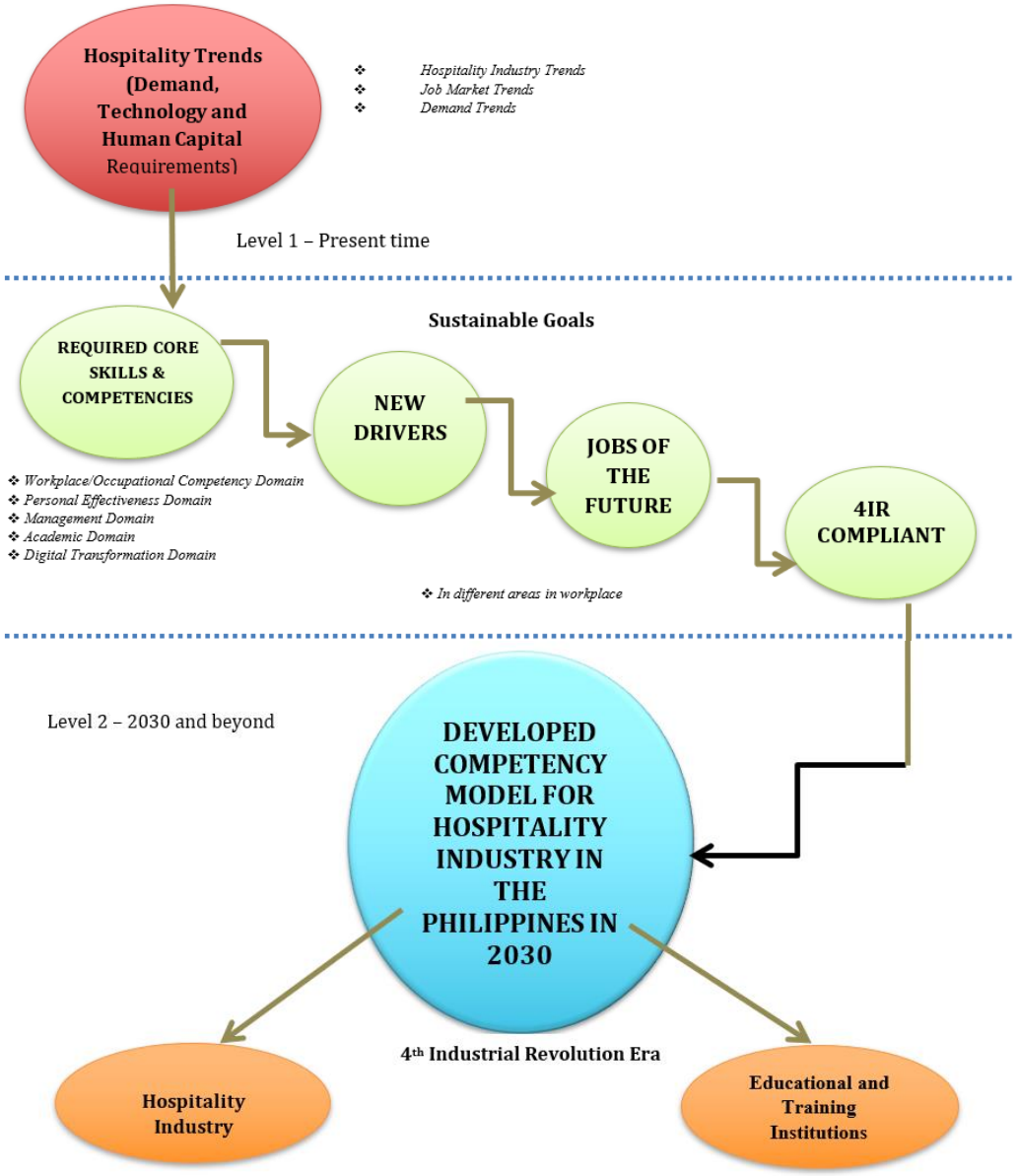
2.5 Conceptual framework

The dearth on theories and concepts in relation to the study under investigation did not stop the researcher in conceptualizing a new knowledge in pursuit to its overall objectives. In this premise, the researcher designed a conceptual framework anchored on the idea in developing a competency model by Lucia and Lepsinger (1999). However, the

Employment and Training Administration (2018) develop a comprehensive competency model for the Hospitality, Tourism, and Events industry. With the globalization is now fast changing and the trends in both in human capital and technology driven industry creates threat and fear for employment. To depict the overall purpose of the study, a framework showing the relevant and important dimensions interlocking to achieve the objective of the study. Figure 1 shows the researcher's formulated conceptual framework.

Figure 1

Researcher's formulated Conceptual Framework



The paradigm shows two level of timeline from the current one to the period of the 4th Industrial Revolution Era. Level 1 shows the current status of the industry based on the hospitality industry trends, job market trends (robotics, IOT, etc.), and demand trends; in this level likewise examined the current core skills and competencies and the possible skills and competencies that are still required by the hospitality industry in 2030. This enable the study to identify emerging new sets in different competency domains as new drivers in getting the required skills sets for the new emerging workforce in 2030 and later identify hospitality jobs that are at risk or already obsolete or there are emerging new career sets as the essential workforce in the hospitality industry in 2030. The digital transformation and the adaptation of the fourth industrial revolution principles gave way on the possible compliance of the hospitality industry in industry 4.0

Lastly, the level 2 focused on the essential elements of this research developing a proposed competency model for the hospitality industry in the Philippines in 2030 or in the era of the 4th industrial revolution. This proposed model identified key skills and competencies required in 2030 and the jobs necessary in this period. Thus, the model can be adopted by educational and training institutions by conforming to the changing landscape in hospitality management education through alignment of academic preparations towards curriculum, instruction and student development. Furthermore, the model can also be the focal point of the hospitality industry itself on their requirements both in the adoption of technology and usage of human resources in 2030 and beyond.

3 METHODOLOGY

This study employed a descriptive research design using a mixed-method approach that integrated both quantitative and qualitative data collection techniques. The research was focused within the hospitality industry in the Philippines. A total of 430 participants were involved, comprising key stakeholder groups: industry professionals (163), including department heads and staff from various hospitality establishments; academic personnel (147), consisting of faculty members teaching hospitality programs across different universities and colleges; and representatives from government regulatory agencies overseeing hospitality and tourism in the Philippines (120). Additionally, key informant interviews were conducted with 18 experts, evenly

distributed across three groups: industry (n = 6), academia (n = 6), and government agencies (n = 6). All participants held top or senior management positions and had a minimum of 10 years of professional experience in their respective sectors.

Future trends in the competencies needed along with the required skills for future were identified through utilization of a survey questionnaire and in-depth interview from the key experts in the field. The instrument used in the study was a researcher's own-formulated survey questionnaire and was developed based on literature, articles, working papers and few studies on competencies. To ensure validity of the instruments, a draft of questionnaire was prepared and presented to the adviser for face and content validity and was likewise presented to the experts in the field of hospitality management operations, education and tourism professionals respectively for critique. These experts from the Academe were the dean, department head and senior faculty members under the college of hospitality from reputable Universities and Colleges in the Philippines. Industry experts were the Reservation Manager, Front Office Supervisor, Kitchen Supervisor, Sous Chef, Dining Team Leader, and Dining and Production staff from various hospitality establishments in the Philippines. And the last group of participants were from the government agencies which consists of the Training Center Manager of TESDA, Senior Tourism Operations Assistant, TESDA Trainor, and Tourism Staff from Provincial Tourism Office. Further modifications and changes were made as recommended by the validators. Prudent concentration was given to make sure that the wording of each question was clear and concise and was revised accordingly. The instrument was pilot tested among 25 respondents who were not included in the actual study.

Permission was obtained from industry professionals, academics, and representatives from government regulatory agencies in the Philippines overseeing hospitality and tourism prior to distributing survey questionnaires and conducting interviews with the target participants. A cover letter was included with the questionnaire, outlining the purpose of the study and assuring respondents of the confidentiality of their responses. The survey questionnaires were distributed to the selected participants, and in-depth interviews were conducted to gather detailed insights. Responses were carefully examined for consistency. The collected data from both the surveys and interviews were then collated, summarized, and analyzed to identify the key competencies required for a successful career in the Philippine hospitality industry by 2030.

Descriptive statistics, including percentages, frequencies, means, and ranks, were calculated to obtain an overview of the respondents' profiles. These statistics also helped identify the core skills and competencies still essential for the hospitality industry in 2030, as well as emerging new skill sets. Additionally, the analysis aimed to determine the key drivers influencing the acquisition of these skills for the future workforce. The Kruskal-Wallis Test was employed to assess whether there were significant differences in participants' ratings regarding the core skills, competencies, and new drivers for 2030. The Spearman Rank Correlation Coefficient was used to examine the relationship between the core skills and competencies required in 2030 and the new drivers shaping these skills, in line with Industry 4.0. For qualitative data analysis, the repertory grid technique was utilized to interpret participants' insights.

4 RESULTS

4.1 Required core skills and competencies by the hospitality industry in 2030

The ability to identify the skills and competencies required for tomorrow's industry leaders are essential for companies that hope to remain competitive. There are several required core skills and competencies by the hospitality industry in 2030. These required core skills and competencies are subdivided into five domains namely: (1) work or occupational competency domain; (2) personal effectiveness domains; (3) management domain; (4) academic domain; and (5) digital transformation domain. Three groups of participants, that is, industry professionals, academe professionals, and government regulating agencies personnel were asked to indicate the level of importance of the required core skills and competencies by the hospitality industry in 2030 using a five-point scale. Their overall perceptions on the importance of these core skills and competencies are discussed on the following sections.

In the era of the COVID-19 pandemic, the use of digital technology has become increasingly vital in minimizing human interaction to help curb the spread of the virus (Lau, 2020). Antonio (2021) found that 92% of hotel managers agreed that the pandemic accelerated the digitalization of processes, with many organizations believing that online meetings and technological productivity tools are now permanent fixtures. The digital

transformation of hotels has the potential to deliver significant efficiency gains in both front-facing services and back-office operations.

Table 1 shows the summary mean score ratings as perceived by the participants for the three sectors: industry, academe and government.

As perceived by the **industry professionals** (n =163), all the core skills and competencies are generally of extreme importance (4.8872). The domain of highest level of importance value is workplace/occupational competencies domain (4.9301); followed by personal effectiveness domain (4.9051); then management domain (4.8779); then succeeded by academic domain (4.7383); and the domain of lowest level of importance value is digital transformation domain (4.4225). These findings imply that digital transformation domain is perceived by the industry professionals not to be very important in their operations. Based on the interview of the researcher with industry experts, *"digital transformation cannot fully replace human workforce but it would be a great tool in making their delivery of services faster and easier".* The findings are backed by the speech of Mr. Timothy Cheong, Group Human Resource Director of Banyan Tree Singapore, during the National Employers Federation Executive Dialogue on Technology Changing the Face of Business in ASEAN held in Singapore on November 17, 2015, when he states that *"The adoption of technology in the hospitality industry is important. However, they find that majority of their customers prefer face-time. The hospitality industry is all about the human touch." The physical structure of some hospitality industries is also not suitable for full automation so the skills and competencies on this domain are not that very important compared to the other domains involving human workforce".*

Table 1

Summary mean score ratings of the three groups of participants by domain

CORE SKILLS/ COMPETENCIES DOMAIN	INDUSTRY n (163)		ACADEME n (147)		GOVERNMENT n (120)		OVERALL n (430)		
	WM	**VI**	**WM**	**VI**	**WM**	**VI**	**WM**	**VI**	**WM Rank**
Workplace/ occupational competencies domain	4.9301	EI	4.9896	EI	4.9059	EI	4.9459	EI	1
Personal effectiveness domain	4.9051	EI	4.9596	EI	4.7771	EI	4.8961	EI	2
Management domain	4.8779	EI	4.9432	EI	4.8478	EI	4.8944	EI	3
Academic domain	4.7383	EI	4.8664	EI	4.5769	EI	4.7535	EI	4
Digital transformation domain	4.4225	EI	4.6833	EI	4.3824	EI	4.5227	EI	5
OVERALL COMPOSITE MEAN	**4.8872**	**EI**	**4.9515**	**EI**	**4.8258**	**EI**	**4.8961**	**EI**	

Legend:

Range of Value	*Level of Importance*
1.00 – 1.79	*Extremely unimportant (EU)*
1.80 – 2.59	*Unimportant (U)*
2.60 – 3.39	*Moderate (M)*
3.40 – 4.19	*Important (I)*
4.20 – 5.00	*Extremely important (EI)*

VI – Verbal Interpretation
WM – Weighted Mean

As for the comparison of the level of importance of each domain of core skills and competencies required by the hospitality industry in 2030 as perceived by the participants from the **academe sector** (n =147), results reveal that all the core skills and competencies are generally extremely important (4.9515) with all five domains also found to be extremely important. The domain with the highest level of importance value is work/ occupational competencies domain (4.9896), and with the lowest value is digital transformation domain (4.6833). These findings denote that on the academicians' points of view, all the five domains of core skills and competencies required by the hospitality industry in 2030 are extremely important.

As for the comparison of the level of importance of each domain of core skills and competencies required by the hospitality industry in 2030 as perceived by the **government personnel** from TESDA and DOT (n = 120), majority of the core skills and competencies are generally of extreme importance (4.8258). All domains are found to be

extremely important. The domain of highest level of importance value is workplace/occupational competencies domain (4.9059); followed by management domain (4.8478); then personal effectiveness domain (4.7771); succeeded by academic domain (4.5769); and the domain of lowest level of importance value is digital transformation domain (4.3824).

These findings imply that digital transformation domain is perceived by the government personnel from TESDA and DOT not to be very important in the operations of hospitality industry. As stated by government officials from TESDA and DOT in an in-depth interview, *"digital transformation cannot fully replaced human workforce but it would be a great tool in making the delivery of services of the hospitality and tourism faster and easier. Digital transformation need to be embraced but with budgetary constraints the process would be slow thus the skills and competencies on digital transformation domain are not that very important compared to the other domains involving human workforce".*

4.2 Significant difference between and among the ratings of the three groups of participants on the core skills and competencies required in 2030

To test the differences in responses among the three groups of participants, Table 2 reveals the results of Kruskal-Wallis by domain. Even if the three groups are one in their perception that core skills and competencies under workplace/occupational competencies domain would be extremely important in the hospitality industry by 2030, academe professionals and industry professionals gave the higher importance on them than those from the government. The difference on their mean perception is found to be highly significant with H = 16.178 and p = 0.000.

Table 2

Results of hypotheses testing by domain

CORE SKILLS/COMPETENCES DOMAIN	GROUP	MEAN	MEAN RANK	KRUSKAL-WALLIS STATISTIC	p-VALUE	REMARKS
Work/Occupational Competencies Domain	Industry	4.8712 [b]	210.18	16.178	0.000	**Reject Ho**
	Academe	4.9796 [a]	232.14			
	Government	4.8083 [b]	202.34			

Personal Effectiveness Domain	Industry	4.8344 [b]	218.30	25.387	0.000	**Reject Ho**
	Academe	4.9184 [a]	236.31			
	Government	4.675 [c]	186.21			
Management Domain	Industry	4.7975 [b]	211.25	8.742	0.000	**Reject Ho**
	Academe	4.8844 [a]	230.91			
	Government	4.725 [b]	202.39			
Academic Domain	Industry	4.6319 [b]	212.98	18.978	0.000	**Reject Ho**
	Academe	4.7755 [a]	241.47			
	Government	4.4667 [c]	187.11			
Digital Transformation Domain	Industry	4.3681 [b]	205.31	11.067	0.004	**Reject Ho**
	Academe	4.5714 [a]	240.02			
	Government	4.325 [b]	199.30			
OVERALL	Industry	4.816 [b]	213.30	13.772	0.001	**Reject Ho**
	Academe	4.9048 [a]	233.41			
	Government	4.7[b]	196.55			

A p-value less than 0.05 indicates significantly different means.
A p-value less than 0.01 indicates highly significantly different means.
Means with different letter superscripts are heterogeneous.

As for the comparison of the **overall level of importance** of the core skills and competencies required by the hospitality industry in 2030 as perceived by the three groups of participants, summary results of Kruskal-Wallis are shown in Table 2 revealing that the overall mean levels of importance given by the three groups on all the core skills and competencies as a whole are found to be of high significant difference with that with H = 13.772 and p = 0.001. Academe professionals gave the highest level of importance to these core skills and competencies followed by the industry professionals and the lastly, the government personnel from TESDA and DOT.

4.3 New drivers in getting the required skills sets for the new emerging workforce in 2030

The participants' degree of agreement/disagreement on the list of new drivers in the development of skills set for workforce and resiliency on the hospitality industry in 2030 using a four-point scale are discussed in the following sections. The new drivers are divided into six categories namely: (1) education and training; (2) strategic alliances; (3) human capital requirements; (4) technological revolution; (5) political, legal, and regulations; and (6) environmental sustainability.

Table 3 shows the summary mean score ratings of the three groups of participants by drivers in the development of skills set for workforce and resiliency on the hospitality industry in 2030 as well as their summary and comparisons.

As perceived by the **industry professionals** (n =163), in general they strongly agree (3.4477) on all the new drivers in the development of skills set for workforce and resiliency on the hospitality industry in 2030. There are 4 out of 6 categories of new drivers by which they strongly agreed on and they agreed on the remaining 2 categories of new drivers. As perceived by the **academe professionals** (n =147), they strongly agree (3.8165) on all the new drivers as a whole in the development of skills set for workforce and resiliency on the hospitality industry in 2030. They strongly agreed on all six categories of new drivers. These findings implied that all new drivers in the development of skills set for workforce and resiliency on the hospitality industry in 2030 as perceived by academe professionals are all important. As perceived by the **government personnel** (n =120) they strongly agree (3.500) on all the new drivers in the development of skills set for workforce and resiliency on the hospitality industry in 2030 in general. There are 4 out of 6 categories of new drivers by which they strongly agreed on and they agreed on the remaining 2 categories of new drivers.

Table 3

Summary mean score ratings of the three groups of participants by drivers

NEW DRIVERS	INDUSTRY n (163)		ACADEME n (147)		GOVERNMENT n (120)		OVERALL n (430)		
	WM	**VI**	**WM**	**VI**	**WM**	**VI**	**WM**	**VI**	**WM Rank**
Technological revolution drivers	3.5944	SA	3.8319	SA	3.6176	SA	3.6978	SA	1
Strategic alliances drivers	3.4813	SA	3.8194	SA	3.5769	SA	3.6502	SA	2
Political, legal and regulations drivers	3.3626	SA	3.7181	SA	3.4500	SA	3.5227	SA	3
Human capital requirements drivers	3.5061	SA	3.7933	SA	3.5769	SA	3.6434	SA	4
Environmental sustainability drivers	3.2454	A	3.6037	SA	3.2284	A	3.3406	SA	5
Education and training drivers	3.2067	A	3.4930	SA	3.1860	A		SA	

						3.2778	6	
OVERALL COMPOSITE MEAN	**3.4477**	**SA**	**3.8165**	**SA**	**3.500**	**SA**	**3.6224**	**SA**

Legend:

Range of Value	Level of Agreement/Disagreement			
1.00 – 1.74	Strongly Disagree	(SD)	VI	–Verbal Interpretation
1.75 – 2.49	Disagree	(D)	WM	- Weighted Mean
2.50 – 3.24	Agree	(A)		
3.25 – 4.00	Strongly Agree	(SA)		

As perceived by **all the participants** (n =430) from the three sectors, generally, they strongly agree (3.6224) on all the new drivers in the development of skills set for workforce and resiliency on the hospitality industry in 2030 They strongly agreed on all six categories of new drivers.

4.4 Significant difference between and among the ratings of the three groups of participants on the new drivers for the required skills sets for the new emerging workforce in 2030

To test the differences in responses among the three groups of participants, Table 4 reveals the results of Kruskal-Wallis by driver.

Table 4

Results of hypotheses testing by drivers

NEW DRIVERS	GROUP	MEAN	MEAN RANK	KRUSKAL-WALLIS STATISTICS	p-VALUE	REMARKS
Education and training drivers	Industry	3.2638 [b]	201.72	16.147	0.000	**Reject Ho**
	Academe	3.4694 [a]	243.97			
	Government	3.2667 [b]	199.34			
Strategic alliances drivers	Industry	3.4908 [b]	194.78	20.470	0.000	**Reject Ho**
	Academe	3.7347 [a]	247.09			
	Government	3.5333 [b]	204.95			
Human capital requirements drivers	Industry	3.5031 [b]	198.90	14.663	0.001	**Reject Ho**
	Academe	3.7075 [a]	242.55			
	Government	3.5167 [b]	204.91			
Technological revolution drivers	Industry	3.5460 [b]	200.16	15.130	0.001	**Reject Ho**
	Academe	3.7483 [a]	242.64			
	Government	3.5583 [b]	203.09			
Political, legal and regulations drivers	Industry	3.4049 [b]	196.60	15.551	0.000	**Reject Ho**
	Academe	3.6327 [a]	243.53			
	Government	3.45 [b]	206.84			

Environmental sustainability drivers	Industry	3.3313 [b]	201.09	19.795	0.000	**Reject Ho**
	Academe	3.5442 [a]	247.08			
	Government	3.3083 [b]	196.39			
OVERALL	Industry	3.4724 [b]	195.09	24.298	0.000	**Reject Ho**
	Academe	3.7279 [a]	250.60			
	Government	3.4917 [b]	200.23			

A p-value less than 0.05 indicates significantly different means.
A p-value less than 0.01 indicates highly significantly different means.
Means with different letter superscripts are heterogeneous.

As for the comparison of the overall level of agreement/disagreement given by the three groups of participants on **all categories of new drivers**, the results of Kruskal-Wallis shown in Table 4 indicate that their mean perceptions on agreeing/disagreeing on the new drivers are of highly significant difference with H = 24.298 and p = 0.000. Academe professionals agree more than the industry professionals and government personnel on all the new drivers under as a whole. The industry professionals and the government personnel are just about the same in the levels of agreement/disagreement on all the new drivers under as a whole.

4.5 Relationship between competency domains and new drivers

Tables 5, 6, 7, 8, and 9 reveal the results of the correlation analysis based on Spearman Rank Correlation Coefficient between all the domains of core skills and competencies, and all the categories of the new drivers.

Table 5 presents the correlation analysis results between the level of importance of the core skills and competencies under work/occupational competencies domain, and the level of agreement on the new drivers for these skills and competencies. Results reveal that work/occupational competencies domain has highly significant correlation with technological revolution (r_s= 0.204, p = 0.000); with human capital requirements (r_s= 0.136, p = 0.005). On the other hand, work/occupational competencies domain has significant correlation with political, legal and regulations (r_s= 0.119, p = 0.014); with strategic alliances driver (r_s= 0.099, p = 0.041); with environmental sustainability (r_s= 0.093, p = 0.050); and with education and training driver (r_s= 0.094, p = 0.050). It means that as the participants' level of agreement that education training; strategic alliances; human capital requirements; technological political, legal and regulations; and

environmental sustainability are new drivers for the skills set required in the future gets slightly higher then, the level of importance they give for the core skills and competencies under work/occupational competencies domain also slightly gets higher. The nature of the relationship is positive which means that as one variable get higher the other variable also gets higher. But the strength of the relationship is weak. Thus, the impact of one variable to another variable is weak or slight or low.

Table 5

Relationship between workplace/occupational competencies domain, and new drivers

PAIR OF VARIABLE	SRCC	p-VALUE	REMARKS
Work/occupational competencies domain, and education and training	0.094	0.050	**Reject Ho**
Work/occupational competencies domain, and strategic alliances	0.099	0.041	**Reject Ho**
Work/occupational competencies domain, and human capital requirements	0.136	0.005	**Reject Ho**
Work/occupational competencies domain, and technological revolution	0.204	0.000	**Reject Ho**
Work/occupational competencies domain, and political, legal and regulations	0.119	0.014	**Reject Ho**
Work/occupational competencies domain, and environmental sustainability	0.093	0.050	**Reject Ho**

A p-value less than 0.05 indicates significant correlation.
A p-value less than 0.01 indicates highly significant correlation.

Table 6 shows the correlation analysis results between the level of importance of the core skills and competencies under personal effectiveness domain, and the level of agreement on the new drivers for these skills and competencies. Results reveal that personal effectiveness domain has highly significant correlation with education and training driver (r_s= 0.173, p = 0.000); with strategic alliances driver (r_s= 0.169, p = 0.000); with human capital requirements (r_s= 0.164, p = 0.001); with technological revolution (r_s= 0.260, p = 0.000); with political, legal and regulations (r_s= 0.192, p = 0.000); and with environmental sustainability (r_s= 0.151, p = 0.000). This means that as the participants' level of agreement that education training; strategic alliances; human capital requirements; technological political, legal and regulations; and environmental

sustainability are new drivers for the skills set required in the future gets slightly higher then, the level of importance they give for the core skills and competencies under personal effectiveness domain also slightly gets higher.

Table 6

Relationship between personal effectiveness domain and new drivers

PAIR OF VARIABLE	SRCC	p-VALUE	REMARKS
Personal effectiveness domain, and education and training	0.173	0.000	**Reject Ho**
Personal effectiveness domain, and strategic alliances	0.169	0.000	**Reject Ho**
Personal effectiveness domain, and human capital requirements	0.164	0.001	**Reject Ho**
Personal effectiveness domain, and technological revolution	0.260	0.000	**Reject Ho**
Personal effectiveness domain, and political, legal and regulations	0.192	0.000	**Reject Ho**
Personal effectiveness domain, and environmental sustainability	0.151	0.000	**Reject Ho**

A p-value less than 0.05 indicates significant correlation.
A p-value less than 0.01 indicates highly significant correlation.

Table 7 reveals the correlation analysis results between the level of importance of the core skills and competencies under management domain, and the level of agreement on the new drivers for these skills and competencies. Results reveal that management domain is not significantly correlated with education and training driver (r_s= 0.026, p = 0.596). On the other hand, Spearman Rank Correlation Coefficient reveal that management domain has highly significant correlation with strategic alliances driver (r_s= 0.197, p = 0.000); with human capital requirements (r_s= 0.166, p = 0.001); with technological revolution (r_s= 0.172, p = 0.000); with political, legal and regulations (r_s= 0.197, p = 0.000); and with environmental sustainability (r_s= 0.179, p = 0.000). This means that as the participants' level of agreement that strategic alliances; human capital requirements; technological political, legal and regulations; and environmental sustainability are new drivers for the skills set required in the future gets slightly higher then, the level of importance they give for the core skills and competencies under management domain also slightly gets higher.

Table 7

Relationship between management domain, and new drivers

PAIR OF VARIABLE	SRCC	p-VALUE	REMARKS
Management domain, and education and training	0.026	0.596	**Accept Ho**
Management domain, and strategic alliances	0.197	0.000	**Reject Ho**
Management domain, and human capital requirements	0.166	0.001	**Reject Ho**
Management domain, and technological revolution	0.172	0.000	**Reject Ho**
Management domain, and political, legal and regulations	0.197	0.000	**Reject Ho**
Management domain, and environmental sustainability	0.179	0.000	**Reject Ho**

A p-value less than 0.05 indicates significant correlation.
A p-value less than 0.01 indicates highly significant correlation.

Table 8 shows the correlation analysis results between the level of importance of the core skills and competencies under academic domain, and the level of agreement on the new drivers for these skills and competencies. Results reveal that academic domain has significant correlation with education and training driver (r_s= 0.110, p = 0.023). On the other hand, findings reveal that academic domain has highly significant correlation with strategic alliances driver (r_s= 0.171, p = 0.000); with human capital requirements (r_s= 0.191, p = 0.000); with technological revolution (r_s= 0.231, p = 0.000); with political, legal and regulations (r_s= 0.257, p = 0.000); and with environmental sustainability (r_s= 0.247, p = 0.000). This means that as the participants' level of agreement that education training; strategic alliances; human capital requirements; technological political, legal and regulations; and environmental sustainability are new drivers for the skills set required in the future gets slightly higher then, the level of importance they give for the core skills and competencies under academic domain also slightly gets higher.

Table 8

Relationship between academic domain, and new drivers

PAIR OF VARIABLE	SRCC	p-VALUE	REMARKS
Academic domain, and education and training	0.110	0.023	**Reject Ho**
Academic domain, and strategic alliances	0.171	0.000	**Reject Ho**
Academic domain, and human capital requirements	0.191	0.000	**Reject Ho**

Academic domain, and technological revolution	0.231	0.000	**Reject Ho**
Academic domain, and political, legal and regulations	0.257	0.000	**Reject Ho**
Academic domain, and environmental sustainability	0.247	0.000	**Reject Ho**

A p-value less than 0.05 indicates significant correlation.
A p-value less than 0.01 indicates highly significant correlation.

Table 9 shows the correlation analysis results between the level of importance of the core skills and competencies under digital transformation domain, and the level of agreement on the new drivers for these skills and competencies. Results reveal that digital transformation domain has highly significant correlation with strategic alliances driver (r_s= 0.233, p = 0.000); with human capital requirements (r_s= 0.172, p = 0.000); with technological revolution (r_s= 0.239, p = 0.000); with political, legal and regulations (r_s= 0.206, p = 0.000); and with environmental sustainability (r_s= 0.181, p = 0.000). Findings also reveal that digital transformation domain has significant correlation with education and training driver (r_s= 0.116, p = 0.016). This means that as the participants' level of agreement that strategic alliances; human capital requirements; technological political, legal and regulations; environmental sustainability; and education training are new drivers for the skills set required in the future gets slightly higher then, the level of importance they give for the core skills and competencies under digital transformation domain also slightly gets higher.

Table 9

Relationship between digital transformation domain, and new drivers

PAIR OF VARIABLE	SRCC	p-VALUE	REMARKS
Digital transformation domain, and education and training	0.116	0.016	**Reject Ho**
Digital transformation domain, and strategic alliances	0.233	0.000	**Reject Ho**
Digital transformation domain, and human capital requirements	0.172	0.000	**Reject Ho**
Digital transformation domain, and technological revolution	0.239	0.000	**Reject Ho**
Digital transformation domain, and political, legal and regulations	0.206	0.000	**Reject Ho**
Digital transformation domain, and environmental sustainability	0.181	0.000	**Reject Ho**

A p-value less than 0.05 indicates significant correlation.
A p-value less than 0.01 indicates highly significant correlation.

4.6 Developed competency model for a career in hospitality industry in the Philippines in 2030

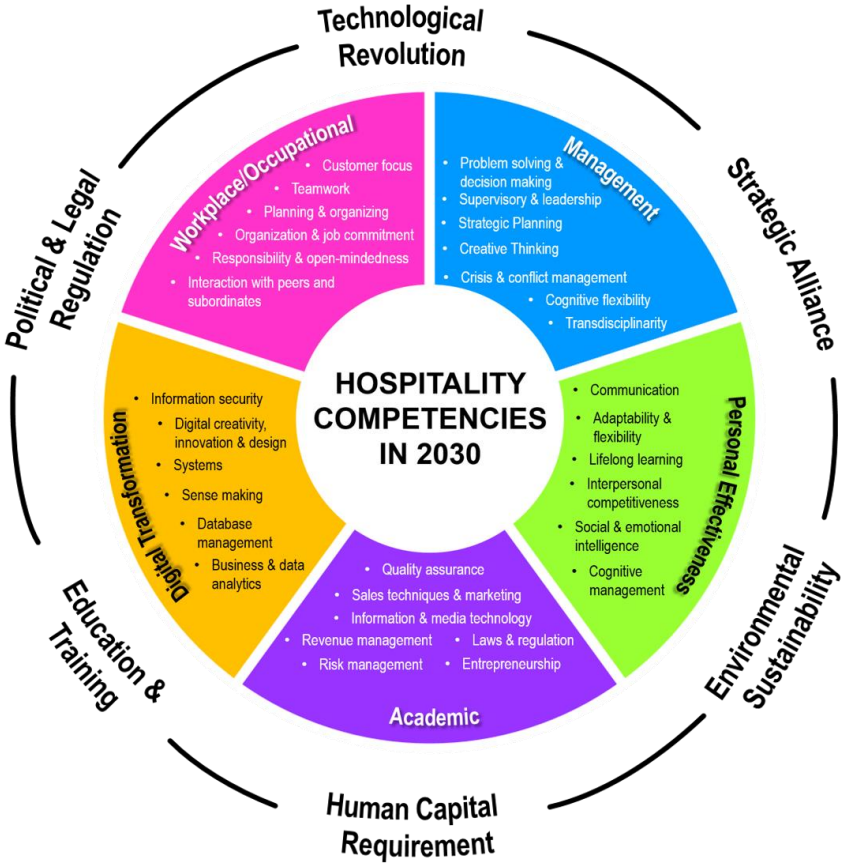
4.6.1 Hospitality competency model

The ability to identify the skills and competencies required for tomorrow's industry leaders are essential for companies that hope to remain competitive in hospitality industry. It is significant to determine the future skills and competencies to be more relevant, competitive, and adaptive to the fast-changing environment. This developed competency model identified key skills and competencies required in 2030 and the jobs necessary in this period. The new drivers were also identified in the development of skills set for workforce and resiliency on the hospitality industry in 203. Thus, the model can be adopted by educational and training institutions by conforming to the changing landscape in hospitality management education through alignment of academic preparations towards curriculum, instruction and student development. Furthermore, the model can also be the focal point of the hospitality industry itself on their requirements both in the adoption of technology and usage of human resources in 2030 and beyond. This competency model could help in the preparation of hospitality industry and educational institution to become 4IR compliant.

In the competency model, the topmost important core skills and competencies per domain were identified. The key-driver predictors of each domain of core skills and competencies were also identified. Figure 2 shows the developed Competency Model for Hospitality Industry in the Philippines in 2030.

Figure 2

Developed Competency Model for Hospitality Industry in the Philippines in 2030



The Hospitality Competency Model consists of five competency domains such as: workplace/occupational competency; management; personal effectiveness; academic; and lastly, digital transformation domains. Each domain has a well-defined critical work functions and technical content areas. All five core skills and competencies are generally of extreme importance in hospitality industry in the Philippines by 2030 as perceived by all groups of participants. Thus, it is essential that their key driver-predictors could also be identified.

Based on the results of the Spearman Rank Correlational Coefficient Analysis, all key drivers, which includes: education and training; strategic alliances; human capital requirement; technological revolution; political, legal and regulations; and lastly, environmental sustainability were significantly correlated to each domain of core skills and competencies. This is so because these skills and competencies are very much needed

to deliver optimal customer satisfaction. These six new drivers are necessary in the development of skills set for workforce and resiliency on the hospitality industry in 2030.

However, based on the regression analysis, not all of them could be significant predictors of each core skills and competencies. These are the significant key driver-predictors by core competency domain:

1. For work/occupational domain, the highly significant key-driver predictor is technological revolution (t = 3.265, p = 0.001);
2. For personal effectiveness domain**,** one key driver which is technological revolution (t = 3.459, p = 0.001) is highly significant key-driver predictors;
3. For management domain, results of the regression analysis for this domain indicating one key driver which is political & legal regulation (t = 1.964, p = 0.050). This driver is significant predictor, of management domain;
4. For academic domain, the significant key-driver predictors are: technological revolution (t = 1.970, p = 0.049); political & legal regulation (t = 2.745, p = 0.006); and environmental sustainability (t = 2.090, p = 0.037);
5. For digital transformation domain, the results of the regression analysis for this domain indicating two key drivers which are: strategic alliances (t = 2.576, p = 0.010) and technological revolution (t = 2.088, p = 0.037)

The significant predictors of core skills and competencies based on multiple regression analysis are: technological revolution, strategic alliances, political & legal regulations, and lastly, environmental sustainability. However, the two remaining key drivers which is the human capital requirement and education and training was still considered in the development of competency model. There will be slight need in human capital due to robotics and artificial technology. Based from the key experts in an in-depth interview, there should be a balance between the usage of human resources and adoption of technology, thus, human workforce would still be existent and relevant in 2030. On the other hand, the three groups of participants agree that education and training is a new driver in the development of skills sets for workforce and resiliency on the hospitality industry in 2030.

5 CORE SKILLS AND COMPETENCIES

The following are the extremely important skills/competencies in hospitality industry in the Philippines in 2030.

A. Workplace/Occupational Competencies Domain

The result of the study reveals that even with digital transformation age, workplace/occupational competencies would still be extremely important in hospitality industry in the Philippines in 2030. Based on the interview of the researcher from general managers in some five start hotels in the country, human resources would not be totally replaced by robots and digital technologies although human workforce would be lessened. Humans would still be needed to operate these technologies and would still have to be in charge in cases when the software is down or needs updating or fixing. Also, labor cost here in the country is less expensive than those in other neighboring ASEAN countries and developed countries so hospitality industry would rather invest on the most needed and important technologies and still have human workforce with human-to-human interaction still in place because it is after all what hospitality is about. The following are the topmost extremely important core skills and competencies in 2030 under workplace/occupational domain.

a.1 Customer Service/Focus. Based on the result of the study, customer service is the topmost extremely important as perceived by all group of participants. Guests or customers are really the top priority of hospitality business. Experts from the Industry believed that human touch is really necessary in hospitality business. The adoption of technology is important in hospitality industry but most critical to hospitality business is customers. These findings of the study also denoted that customer service would still be of topmost importance and this can be attributed to some predictions of some experts from the industry, academe and government that with technology being present and almost equal among establishments, the competition would gear towards who had the personalized customer service that would result to utmost customer satisfaction. Hence, human workforce would still be existent and relevant in 2030.

The main goal of any hospitality establishments is to satisfy the needs of customers. Customer focus skills are all about understanding the customer's needs and being able to cater to them. Every staff of any hospitality establishment must provide a

superior customer service, meet customers' needs and providing them with products and services they want or providing solutions to their problem. Providing exceptional service creates a competitive edge in market. Hospitality workforce must provide a personalized service to their guests because it is the key to create an unforgettable experience for guest. With that, customer satisfaction will be attained.

a.2 Teamwork – Teamwork is another extremely important core skills and competencies in 2030. It is often a crucial part of any hospitality business. It is necessary for every member of the organization to work collaboratively with a group of people in order to achieve the organizational goal. Hospitality workforce must work cooperatively with others to complete work assignments. Successful members of the hospitality industry work well with others and can be a productive member of a team. They value the contributions of everyone.

a.3 Planning and Organizing – This competency requires hospitality workforce to establish and prioritize tasks in order to manage time and resources appropriately. They must plan accurately the estimated time and effort required to complete a task. They should organize personal time to carry out responsibilities. They must also establish priorities systematically, differentiating between urgent, important, and unimportant tasks. Planning and organizing is extremely important skills/competencies in 2030.

a.4 Organization and Job Commitment – Study reveals that commitment to work is a desirable competency that is why this is extremely important in 2030. Organization and job commitment is a vital skill in the hospitality industry as it can determine organizations success. This is the degree of an individual's relations and experiences as a sense of loyalty toward in any hospitality organization. To be successful in the hospitality industry, you must be committed to serving your customers in the best way possible to ensure customer satisfaction.

a.5 Work Ethics – Industry experts affirmed that soft skills are more important than hard skills. Many hospitality industries hire for attitude and because they believe that they already acquired the hard skills in schools and they can train them later on. Attitude, character among other affective/personality traits are still extremely important for the human interaction aspect in the digital transformation age. Industry experts believed that good work attitudes are priceless in the hospitality and tourism industry. Human attitudes,

characters and personalities would play an important role in personalizing service to attain customer satisfaction.

Work ethics is one of the important skills the hospitality workforce must possess in 2030. Work ethics refers to rules of behavior that is based on moral obligations and duties, indicating how people should behave. It is also concern to an individual's moral judgement about right and wrong and promotes people to do what is right. Ethical behavior can bring significant benefits to hospitality business.

a.6 Responsibility and Open mindedness – Responsibility and open mindedness are some of the most sought employee traits. Being open-minded means, you have a willingness to listen to other ideas and opinions and consider the possibility that you are wrong or may change your own perspective. Responsibility and Open-mindedness is still important competencies in 2030.

a.7 Interaction with peers and subordinates – The study revealed that human interaction is still very important in hospitality and tourism industry, thus their workplace/occupational skills and competencies would still be of extreme importance in 2030. Technology cannot totally replace human mind for human interaction is vital in hospitality and tourism industry. Human interaction is very vital in hospitality and tourism industry even with the advent of all the advanced technologies. Hospitality workforce is continually dealing with customers face-to-face and strong interpersonal skills are necessary for creating a positive guest experience. Interpersonal skills are important dimensions of core competencies of hospitality industry workers. This skill will help you to develop relationships with people. Strong relationship with people you work with will help you to succeed in the workplace. Human interaction is still very important even with the existent of all the advance technologies

B. Management Domain

With the advent of many and different systems software, AI and the likes in 2030, management domain's skills and competencies are still extremely important. There are some tasks that cannot be performed by machines. Ultimately, the human touch can never be replaced by a machine. For that reason, the hospitality sector will almost certainly be one of partial automation. Management domain is still important in the hospitality industry in the future. The following are the topmost extremely important core skills and competencies in 2030 under Management domain.

b.1 Problem Solving and decision Making - Additional future competencies needed by managers in the hospitality industry includes problem-solving and decision making. Not all tasks in hospitality industry can be replaced by machines. Jobs resistant to automation involves extensive non-routine, tasks that require judgment and problem-solving. While technology is important in creating a seamless guest experience, application of human touch is also extremely vital. Problem solving and decision making are important skills for hospitality business. Hospitality workforce must know how to generate, evaluate and implement solutions to any problem may arise in hospitality business.

b.2 Strategic Planning – is also an important skill in hospitality industry in the future. Workforce must know how to plan and set goals, decide what actions need to be taken by employees, and help employees achieve those goals.

b.3 Supervisory and Leadership - supervisory and leadership skills are found to be the topmost extremely important competencies as perceived by industry professionals. Some researchers affirmed that leadership competencies are skills required to lead others. While managers and supervisors obviously need these skills, even employees who are not directly responsible for others may need strong leadership competencies to influence their coworkers or to work effectively as part of a team. Modern skills in management and leadership are essential for the hospitality business to prosper and keep pace with rapidly developing economy. Supervisory and leadership are competencies that is fundamental to all leaders in the hospitality industry. It is important to train, sustain, develop and manage employees. Great hospitality leaders must have strong leadership skills and are able to command projects and make significant contributions to an organization's overall success.

b.4 Creative thinking – This skill involves the generation of new ideas and concepts that have value to individuals or others and the development of these ideas and concepts from thought to reality. This is still important competency in the future.

b.5 Crisis and conflict Management – This is a very necessary in preventing conflicts among individuals working in hospitality industry. Crisis and conflict management are extremely important skills/competencies in 2030.

b.6 Cognitive Flexibility – It is the ability to transition our thoughts between multiple concepts or perspective. This skill is important in 2030.

b.7 Transdisciplinarity – It is the ability to think outside the box. It is essential skills for the future workforce. This is literacy in the ability to understand concepts across multiple disciplines.

C. Personal Effectiveness Domain

Personal Effectiveness Domain are personal attributes essential for all life roles. It is often referred to as "soft skills," and are generally learned in the home or community and honed at school and in the workplace. The result of the study reveals that personal effectiveness domain would still be extremely important in hospitality industry in the Philippines in 2030. The following are the topmost extremely important core skills and competencies in 2030 under personal effectiveness domain.

c.1 Communication - communication and other affective/personality traits in dealing with different kinds of customers are indeed still extremely important in hospitality industry in 2030. Communication is the most important and the most used of all skills in the hospitality and tourism industry. Communication is the topmost extremely important skills/competencies as perceived by all groups of participants under personal effectiveness domain. Communication skills is important dimensions of core competencies of hospitality industry workers. Communication skills are highly valued and imperative when working in hospitality industry. Every hospitality workforce must communicate effectively both orally and in writing.

c.2 Adaptability and Flexibility - Adaptability and flexibility skills would be some of the most crucial skills/competencies that are required for future success. With rapid changes in technology, diversity and society, hospitality industry needs employees who are open to new ideas, flexible enough to work through challenging issues and able to cope when things don’t go as planned. Hospitality workforce must have the ability to adjust or change itself to best meet the needs of the situation or environment.

c.3 Lifelong Learning - Life and career skills is one of the main set of skills that are most critical to future success. It is a skill that must continue to evolve in an ever-changing workplace. It is a continuously supportive process which stimulates and empowers individuals to acquire the necessary knowledge, skills and attitudes they will require throughout their lifetimes.

c.4 Interpersonal Competencies – Are skills used everyday when communicating and interacting with other people both individually and in groups.

Hospitality workforce must able to work well in a team and communicate effectively with others. Interpersonal competencies are vital in all areas of life at work.

c.5 Social and emotional Intelligence – It is the ability to be aware of our own feelings as well as others' feelings. This competency can determine how to manage ourselves and consist of self-awareness, self-management, social awareness and social skills/relationship management. Socially intelligent employees are able to assess the emotions of those around them and adapt their words, tome and gestures accordingly. Social and emotional intelligence is extremely important skills/competencies in 2030.

c.6 Cognitive Management – Hospitality workforce must have the knowledge in hospitality management operation and this is also an extremely important skills/competencies in the future.

D. Academic Domain

Academic competencies are primary learned in school setting. They include cognitive functions and thinking styles. Due to the growth of tourism and hospitality industry in the Philippines, tourism and hospitality management programs becomes more popular with biggest enrolment. Hospitality and tourism industry should strengthen the formal education system in order to ensure that the students will obtain critical competencies needed in the future. Even if we are in the beginning of the fourth industrial revolution, core skills and competencies under academic domains are still very important in the hospitality and tourism industry. The following topmost skills and competencies under academic domain are found to be extremely important in hospitality industry in 2030:

d.1 Quality Assurance - Quality assurance ranked first in skills and competencies under academic domain as perceived by all participants. Providing quality products and services are the main goal of any hospitality establishments. Delivering a high-quality service is one of the main challenges of hospitality business. Hospitality workforce must know how to establish procedures and quality standards and monitor these against agreed targets.

d.2 Laws and Regulations – Hospitality workforce must have a knowledge about various hospitality laws to avoid breaking them. Failing to following laws and regulations can result to fines, lawsuits and negative publicity and these are disastrous to a hospitality business.

d.3 Risk Management – Hospitality workforce must have the ability to identify, analyze, assess and avoid or mitigate risks coming from a variety of sources. That is why it is still important competency in the future.

d.4 Sales Techniques and Marketing – It plays a key role in building a brand, alluring new customers and maintaining loyalty. Digital marketing is an important part of marketing strategy for any hotel business in the current technology era.

d.5 Information and Media Technology - Information, media and technology skills are one of the main set of skills that are most critical to future success. Hospitality workers must be able to exhibit a range of functional and critical thinking skills related to information, media and technology.

d.6 Revenue Management – This includes the skills in accounting, industry analysis as well as technology skills in order to drive revenues and profitability.

d.7 Entrepreneurship – hospitality workforce must have the entrepreneurship skills needed to start up and run a business.

E. Digital Transformation Domain

Digital transformation domain as perceived by all groups of participants are to be very important in the operations of hospitality industry. Digital transformation will certainly enhance the development of many industry sectors including hospitality industry. The fourth industrial revolution could affect the hospitality industry because the challenges of mass customization, smart working, and digitalization are also applied in the hospitality business. Hospitality establishments have recognized the importance of technology in improving the guest experience and are now embracing digital transformation to increase the speed and efficiency of their processes and provide an even more customer-centric experience for its guests. The following are skills/competencies under digital transformation domain perceived to be very important in 2030:

e.1 Information Security – It is a crucial skill aspect of many industries especially the hospitality industry due to the nature of data collected by companies operating within hospitality. Hospitality establishments gather and electronically store a range of sensitive personal guest date such as names, phone number, address and credit card details. Workers must have the knowledge and skills on how to secure the information of customers and guests.

e.2 Digital Creativity, Innovation and Design - Innovation skill is one of the main set of skills that are most critical to future success. In the article, Workforce of the future: the competing forces shaping 2030, shows that digital skills are one of the important skills needed by the workforce of the future. Some studies revealed that the new technology and innovation is one of additional future competencies needed by managers in the hospitality industry. Many colleges and Universities in the Philippines are preparing future professionals to be able to deal with problems and search for solutions, including digital competence as a vital skill set. Some government agencies in the Philippines are gearing towards addressing the requirements of the digital revolution. According to Industry experts, digital transformation cannot fully replace human workforce but it would be a great tool in making their delivery of services faster and easier.

e.3 Systems – ability to manage and operate the different information systems used in hospitality industry such as: point of sale system; management information system; property management system; decision support system and other new modern hospitality management systems. This skill is necessary to be competitive in the future.

e.4 Sense Making – ability to determine the deeper meaning of what is being expressed. In the new era of digital technology, robots are expected to replace humans in basic everyday tasks. Sense making is a higher-level thinking skill that cannot be codified and critical to decision making.

e.5 Database Management – knowledge of database queries, theory and design; know how to use the database; ensure that all data is being collected and managed in the central data management system are important skills needed in 2030. Workforce must possess a high level of technical skills to work with computers and have a strong organization skill to manage large databases.

e.6 Business and Data Analytics – future hospitality workforce must have the skills for data analysts and this will serve as a competitive advantage.

6 NEW DRIVERS IN GETTING THE REQUIRED SKILLS SETS FOR THE NEW EMERGING WORKFORCE IN 2030

A. Technological Revolution

The three groups of participants strongly agree technological revolution is a new driver in the development of skills set for workforce and resiliency on the hospitality industry in 2030. Technological revolution is key-driver predictor of core skills and competencies under workplace/occupational domain, personal effectiveness domain, academic domain and lastly, digital technological domain. Hospitality establishments have recognized the importance of technology in improving the guest experience and are now embracing digital transformation to increase the speed and efficiency of their processes and provide an even more customer-centric experience for its guests. Some government agencies in the Philippines are responsive of this 4th Industrial revolution since their strategies are gearing towards addressing the requirements of the technological revolution. The hospitality industry is extremely competitive that is why we need to adapt the latest technological developments so that we will not be left behind by the competitors.

B. Strategic Alliances

Strategic alliance is a new driver in the development of skills set for workforce and resiliency on the hospitality industry in 2030 as perceived by the three groups of participants. Strategic alliance is key-driver predictor of digital technological domain. This could be due to the globalization. In the hospitality industry, famous hotels on progressive countries have been branching out to other countries. So, it is essential for future workforce to consider the high standards of work set by these famous hotels. Strategic alliance is important in hospitality industry since companies are competing on a global field. The hospitality is one of the dynamic sectors in the world that is why the industry must be globally competitive.

C. Political, Legal and Regulations

Political, Legal and Regulations are the new driver in the development of skills set for workforce and resiliency on the hospitality industry in 2030 and perceived strongly agree by the three groups of participants. Political, Legal and Regulations is key-driver predictor under management domain and academic domain. Hospitality business is

subject to various legal laws and regulations. Managers, employees and other staff members to know enough knowledge about various hospitality laws and regulations to avoid lawsuits, fines and negative publicity.

D. Environmental Sustainability

The three groups of participants strongly agree that Environmental Sustainability is a new driver in the development of skills set for workforce and resiliency on the hospitality industry in 2030. Environmental Sustainability is key-driver predictor of core skills and competencies under academic domain. The evolution of the fourth industrial revolution have an unknown potential impact on sustainability of environment. With an alarming number of environmental problems worldwide, some hotels in the Philippines are spearheading numerous projects for the benefit of the environment. Several Universities and Colleges in the Philippines are also making some initiatives to advance sustainable development. Philippine government are also taking initiatives in preserving and conserving our environment.

E. Human Capital Requirements

The three groups of participants strongly agree that human capital requirement is a new driver in the development of skills set for workforce and resiliency on the hospitality industry in 2030. These findings imply that human capital is still important in the hospitality business even with digital transformation age. Industry experts affirmed that human resources would not be totally replaced by robots. Humans would still be needed to operate these technologies and would still have to be in charge in cases when the software is down or needs updating or fixing. According to Industry experts, advanced technology in the hospitality industry will play an important role to enhance the competitiveness and business development. However, the quantity and quality of human resources is equally important in the context of the birth of fourth industrial revolution. Technology is really a great help, however, the human factor is extremely important.

F. Education and Training

The three groups of participants agree that education and training is a new driver in the development of skills set for workforce and resiliency on the hospitality industry in 2030. These findings of the study imply that education and training systems need to adapt to better prepare people for the flexibility and critical thinking skills they will need

in the future workplace. The findings also imply that we have to maximize the effective use of technology in educational institution.

7 CONCLUSIONS AND RECOMMENDATIONS

Based from the results and findings, All the domains of required core skills and competencies in the hospitality industry by 2030 are extremely important to be able to adapt to 4IR scenario such as: workplace/occupational competency; personal effectiveness; management; academic; and lastly, digital transformation domains. The adoption of technology in hospitality industry is important but most critical to hospitality business is customers and they prefer face-time. Human touch is wanting despite of the digital transformation. Human workforce would still be existent and relevant in 2030. All the new drivers are necessary and relevant in the development of skills set for workforce and resiliency on the hospitality industry in 2030. This consists of: education and training; strategic alliances; human capital requirement; technological revolution; political, legal and regulations; and lastly, environmental sustainability.

The developed Hospitality Competency Model consists of five competency domains such as: workplace/occupational competency; management; personal effectiveness; academic; and lastly, digital transformation domains. All five core skills and competencies are generally of extreme importance in hospitality industry in the Philippines by 2030 as perceived by all groups of participants. The model also consists of six key drivers, which includes: education and training; strategic alliances; human capital requirement; technological revolution; political, legal and regulations; and lastly, environmental sustainability. These new drivers were significantly correlated to each domain of core skills and competencies.

Based on the findings, it is highly recommended that the industry, academe and the government may collectively devise plan of activities to equip the current and future workers in the hospitality industry of the required core skills and competencies by the hospitality industry in 2030. The industry is suggested to embrace digital transformation but still staying true to their vision, goals and hospitality brand. The academe is suggested to work in coordination with the industry and government regulating agencies in producing globally competitive, multi-skilled, tech savvy, environment conscious and

values oriented future workforce. The government is suggested to create human capital development roadmap and provide important infrastructures for digital transformation The developed competency model can serve as a foundation for industry workers in preparation for the jobs of the future including the requirements for its potential workforce. The model can also be the focal point of the hospitality industry itself on their requirements both in the adoption of technology and usage of human resources in 2030 and beyond. Furthermore, this model can be adopted by educational and training institutions through alignment of academic preparations towards curriculum, instruction and student development.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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