Validation of a Questionnaire to Evaluate the Hotel Employee Innovation Competency: Confirmatory Factor Analysis

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Abstract

The development and growth of the hotel business in Indonesia are increasingly rapid, along with the development of the tourism industry. One of the competencies that are needed in facing business competition is innovative competency. Although there have been many studies discussing the importance of mastering innovative competencies, there are still limited instruments for measuring the innovative competencies of hospitality employees. The purpose of this study is to develop an innovative competency measurement instrument for hospitality employees. The development of an innovation competency instrument for hotel marketing employees consists of three indicators, namely individual, interpersonal, and social network conditions. Data collection involved 143 hospitality marketing employees. Data analysis to test the validity of this innovative competency questionnaire uses the Confirmatory Factor Analysis (CFA). The study results revealed that the questionnaire was valid with the following criteria: RMSEA 0.094 (moderate), RMR = 0.037 (fit), Comparative Fit Index (CFI) = 0.901 (fit), Tucker-Lewis Index (TLI) = 0.891 (moderate), and NFI = 0.837 (moderate). These results indicate that an indication of a good fit or an innovative competency construct model in this study is declared fit so that it can be used to identify the innovative competencies of Sales Marketing employees in hospitality.

Keywords: innovative; interpersonal; social network; instrument validity.

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Introduction

In recent years, innovation has increasingly become an interesting research topic to study (OECD, 2006; Peters & Pikkemaat, 2006). Indonesia's innovative performance data in 2019 is not yet satisfactory enough. The Global Innovation Index (GII) in 2019 in ASEAN shows that Indonesia has a score of 29.8 or ranked 85th out of 129 countries in the world, while in the ASEAN region Indonesia's innovation ranks in the second-lowest position (Global Innovation Index, 2019) (see Figure 1). The first rank of ASEAN in Singapore, with a score of 58.4, following that Malaysia is ranked second, and Vietnam and Thailand are ranked third. The Global Innovation Index is a benchmark used to help governments as policyholders in stimulating and measuring innovation activities. Furthermore, innovation activities in a country are the driving force for socio-economic development.
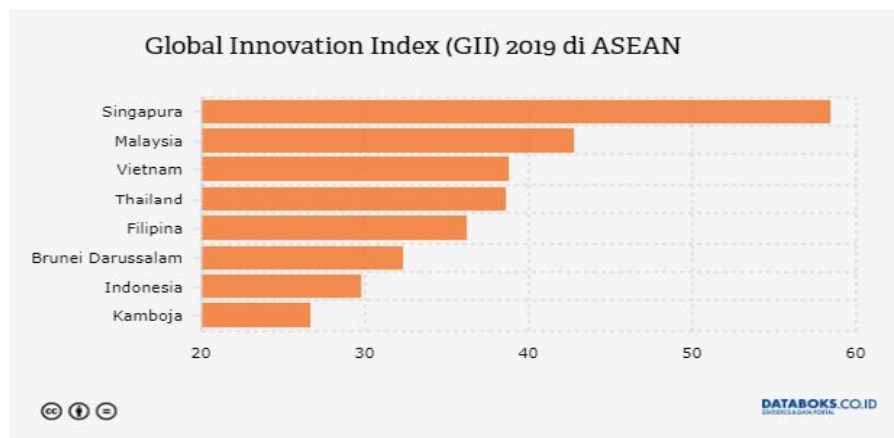

Figure 1. 2019 Global Innovation Index (GII) in ASEAN

These conditions encourage the Indonesian government to be able to conduct skills training because the majority of Indonesian workers lack education, skills, work attitude intelligence, foreign language skills, and computer operations. Improving the quality of human resources is not only the responsibility of the government, but the direct impact of the ASEAN Economic Community is also felt by the community on work competition, making all fields of movement and responsibility to participate and prepare themselves. Therefore, we need workers who not only have competence in their field but also have innovation competence to be able to create new things that are better and new than before.

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Therefore, it is essential for organizations in order to win the business competition, one of which is to know innovative competencies in employees so that employee development programs can be identified and developed so that they can improve innovative competencies as a basis for building innovative behavior.

Many previous studies have examined innovative behavior, but the study is still scattered in several focus studies, for example, some analyzing economic dimensions (Weiermair, 2006), determinants of dynamic change (Richards & Carson, 2006), or on the role of entrepreneurship (Brunner-Sperdin & Peters, 2004). Specifically, innovation has been recognized as a key to the success of the tourism and hospitality business (Mahfud, Pardjono, & Lastariwati, 2019; Ottenbacher, 2007; Paget, Dimanche, & Mounet, 2010; Wu, Siswanto, & Mahfud, 2018), especially in the face of competition increasingly competitive business. Scholars (Hjalager, Kwiatkowski, & Østervig Larsen, 2018; Ottenbacher, 2007) state that the success of a company is the result of several factors and entrepreneurial activities such as innovation. Also, tourists, in general, are willing to pay more to companies that can show higher innovation activities (de la Peña, Núñez-Serrano, Turrión, & Velázquez, 2016).

The hospitality industry in dealing with business competition must be able to maintain business stability and is even expected to be able to lead the business competition. Competitive work or business competition requires innovation to improve organizational competitiveness (Janssen, 2004). A hotel may also be forced to develop new services to fill vacant hotel rooms during the holiday season or to maintain good relations with its customers. All of that was done to improve service quality and ultimately have an impact on profitability. In the context of this competition, a hotel may be able to face business competition or even some that experience a decline. Innovative activity efforts by changing old services into new services needed by consumers will be able to increase the level of sales of hotel services. Therefore, a thriving hotel industry needs to apply sophisticated marketing techniques, such as the ability of innovation in marketing hospitality services. Innovation is essential for not only survival but also long-term stability and profitability (Cooper & Edgett, 1999).

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A study conducted by Cerinsek and Dolinsek (2009) states the definition of innovative work competency, which is a combination of two concepts (competence and innovation) into one. Meanwhile, according to Raykov (2014), innovation is a process of creation, diffusion, and transformation of knowledge into new high-value products. Thus, innovative work competencies are defined as actions and reactions of individuals in innovative ways in dealing with various critical events, problems, or tasks that demand innovative thinking and in specific contexts. Cerinsek and Dolinsek (2009) state that the characteristics that underlie the formation of individual personalities can influence innovation behavior; it is a generalization of the whole situation. It can last for quite an extended period. The characteristics that underlie innovation competence come from the basic concepts of innovation behavior understood as an individual's ability to be creative and entrepreneurial at the same time. An individual innovation competency must have the right knowledge and ability to do something.

A study conducted by Kanter (1985) states that employees exhibit entrepreneurial behavior if superiors give them the power to act. In connection with innovation competencies, entrepreneurial behavior is upgraded to innovation behavior, which includes creativity. There is a causal relationship that states that innovation competence predicts innovation behavior. According to Spencer and Spencer (1993), competence always includes intention, which is the motive or nature of the style that causes actions towards results. Concerning innovation competencies, individual creative ideas can provide an impetus for proactivity and the application of knowledge and skills in order to turn ideas into value-added innovations.

The company focuses its attention on superior employees, who have the knowledge and skills, to a higher level both in the technical, marketing, professional, and managerial jobs. According to El-Korany (2007) states that the ability of employees to access and apply the right knowledge at the right time will accelerate the innovation process. The difference is motivation, proactive entrepreneurship, curiosity, creativity, and other abilities, which are all characteristics that underlie innovation competence. Therefore, an effort towards innovation competence is the most effective way for employees not only to work superiorly but also to position themselves in an organization.

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An essential criterion in innovation competence is work prediction. According to Spencer and Spencer (1993), a characteristic is not a competency unless it predicts something meaningful in the real world, for example, effective performance. It can be explained that in the discussion of innovation competence, it is stated that a work action does not increase added value, then it is not called innovation. The criterion used to evaluate innovation competence is the actual increase in value-added to work results in the form of new products, services, or processes.

Innovative competence is a combination of various resources that leads to learning, work behavior in complex situations, mobilization, and a combination of resources become more and more productive (Garcia, Penalver, & Watts, 2013). Marin-Garcia, Pérez-Peñalver, and Watts (2013) categorize work competencies in general into three dimensions, namely individuals, interpersonal, and social networks. Referring to the theory of Marin-Garcia et al. (2013), these three dimensions can explain innovative competency. The individual dimension related to the innovation of the process of generating new ideas is not the same as applying these ideas in practice, and it is indeed necessary to deal with critical incidents, problems or tasks that demand innovative thinking and reactions to overcome difficulties that might arise (Marin-Garcia et al., 2013). The interpersonal dimension is rooted in communication, leadership, and teamwork (Marin-Garcia et al., 2013). Communication plays an essential part in the collective construction process of ideas, as well as in subsequent processing, evaluation, or argumentation. Meanwhile, the dimension of social networking is an innovation that coincides with ethical values and responsibility that is sustainable. This dimension also takes into account the ability to work cooperatively with people from different countries, with different cultures and backgrounds, and the ability of language to obtain or create a more extensive network of contacts (Marin-Garcia et al., 2013).

Referring to the previous theoretical basis, it can be understood that innovative competence is essential in shaping innovative behavior. Although there have been many studies that discuss innovative behavior, it is still limited to studies that discuss innovative competencies and how to measure innovative competencies. Thus, this study aims to develop innovative competency measurement instruments involving three dimensions, namely individuals, interpersonal, and social networks.

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Measurement of individual aspects includes indicators of creativity, perseverance, risk-taking, and personal attitude. Also, the measurement of interpersonal aspects includes communication and team leadership. Finally, aspects of social networking include networking indicators related to employee ethics and responsibilities. Although there have been many studies discussing the importance of mastering innovative competencies, there are still limited instruments for measuring the innovative competencies of hospitality employees.

Method

Participants

This study involved 143 employees in the Hospitality Sales Marketing Department with demographic data shown in table 1. All respondents agreed to be directly involved in providing data following the questionnaire distributed. The employees of the Hospitality Sales Marketing Department came from various regions and big cities, namely: Bandung, Jakarta, Yogjakarta, and Bali. Implementation of data retrieval through direct input and via the online bit.ly link.

Table 1
Demographic Data of Respondents

Category	(N = 143)
Gender	
Man	83
Girl	60
Age	
Less than 25 years	62
2 – 5 years	62
6 – 10 years	17
10 years and above	2
Length of work	
Under 3 years	54
3 - 5 years	51
6 - 10 years	29
Over 10 years	9
Education	
Under high school	0
High school / vocational high school	39
Diploma	58
S1 / S2 / above S2	46

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Measurement Development

The innovative competency measurement instrument consists of 25 items consisting of three dimensions with favorable and unfavorable items (see Table 2). An innovative competency measurement instrument adapted from (Marin-Garcia et al., 2013). The previous study (Cerinsek & Dolinsek, 2009) states that the innovative competency measuring instrument has good validity and can be relied upon to determine employee innovation competencies. As such, this questionnaire is appropriate to be used to measure the innovative competencies of hotel marketing employees. Furthermore, Hsien (2010) states that an innovation competency variable is a multidimensional group.

Table 2

Distribution of questionnaire items in each dimensions

Dimensi	No item		Jumlah
	Favorable	*Unfavorable*	
Individu	1,2,3,4,5, 6,7,8,9,10, 11,12		12
Interpersonal	13,14,15,16,17, 18,20	19	8
Jaringan sosial	21,22,23,24,25		5
Total	24	1	25

Procedures

The process of measuring instrument adaptation is carried out through a series of stages concerning the test adaptation guidelines from the International Test Committee (ITC) guidelines for translating and adapting tests. Adaptation to measuring instruments is significant to be done so that they are adjusted to the conditions of the employees in Indonesia, considering that the measuring instruments from previous researchers were used by subjects who were different from the research that is currently being conducted by researchers. If a test kit contains this problem, the effectiveness of the test kit will not be even, and there will be a bias. Besides, there are vocabularies in English that have

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different equivalent words in Indonesian. The stages in implementing the adaptation of innovative competency measurement instruments are shown in Figure 2.
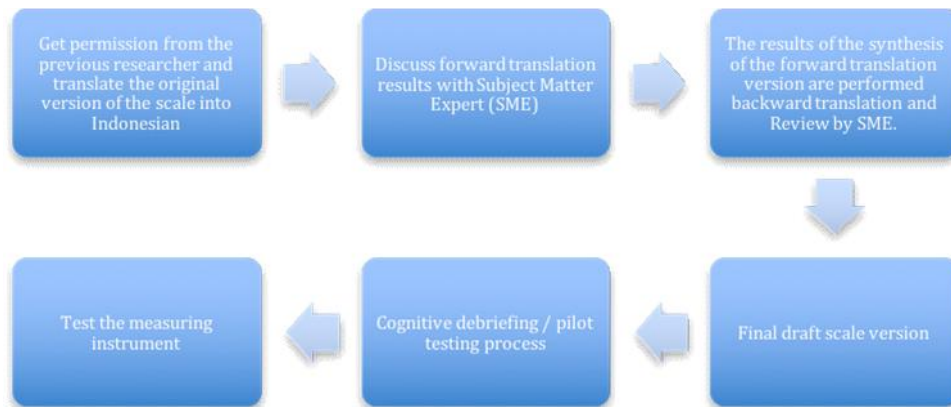

Figure 2. Stages of Development of Innovation Competency Measurement Instruments

The stages of developing an innovation competency instrument are as follows:

Pre-condition phase, at this stage, the researcher reviews several measuring instruments on each variable that can be used in the study and then chooses the measurement tool that is most suitable for the study. Next, ask for permission from the meter maker by sending a message via email. After getting permission from the previous researchers, the next step was to choose a group of translators and experts based on English and Indonesian language skills, educational background, knowledge of the constructs of measuring instruments, and research subjects.

Translating the original version of the measuring instrument into Indonesian, also called forward translation. The translator process was carried out by two translators with the criteria of having excellent English skills. The translator is given information regarding the research objectives, operational definitions of each variable, and subjects that are the target of the measuring instrument so that the translator better understands the purpose of the translation. The results of the forward

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translation are then discussed with two people who have a background in Masters in Psychology and have English skills, to get a scale of Indonesian translations called the synthesis of forward translation.

The next stage is re-translation, which is the process of translating the scale of the forward translation version into the language used on the original scale, namely into English. In this study, assisted by two translators, who have English skills. Both translators did not see the original measuring instrument used in this study. Then the results of the back translation by the two translators are presented and discussed with two people who have a background in Masters of Psychology who have English skills to get a scale of Indonesian translation called back translation synthesis.

In the next stage, the experts review to assess the equivalence and validity of the contents of the measuring instrument. Two experts involved in this process have a psychological background, and one expert is a practitioner in the field of industrial and organizational psychology who has experience in planning and implementing organizational change. Each expert is given an assessment form on comparative language and similarity between the scale of the original version and the back-translated version. Language comparison refers to how much the item can be compared in terms of the language used. The similarity of meaning refers to whether the item has the same meaning, even though it uses a different language. The assessment uses rating scales with a scale range of 1-5. In language comparison, (comparability) refers to the level of language similarity, phrases, terms, words, and sentences formally. Highly comparable items are given a score of 1, whereas items that cannot be compared are given a score of 5. Furthermore, the similarity aspect refers to the level of similarity of meaning. Items that have the same meaning are given a score of 1, while those without similarities are given a score of 5. Next, an analysis of the mean scores of comparability and the similarity of items from five experts is given. In this study, using scale 1-5, with a mean score> 3, is to have good comparability and similarity so that it can be compared and has the same meaning as the original version. Based on the calculation of the level of comparability and similarity of items.

When the draft is ready, the cognitive debriefing/pilot testing process is carried out by including subjects who have the same requirements as the actual research subjects. In this study, using 10 Sales

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Marketing employees and asked to provide answers, input, and suggestions on the questionnaire. The last step is to carry out a trial to measure the actual subject according to the criteria set by the researcher.

Data analysis

The construct validity in this study was tested using Confirmatory Factor Analysis (CFA). CFA is designed to test the multidimensionality of a theoretical construct. This analysis is often called testing the validity of a theoretical construct. The latent variables used in research are formed based on theoretical concepts with several indicators or manifests. Confirmatory analysis tests whether these indicators are valid as a measure of latent constructs (Ghozali, 2017).

Result

Test the construct validity of innovative competency measurement instruments using Confirmatory Factor Analysis (CFA) with the support of AMOS version 22. CFA analysis is used to test the suitability of statement items and indicators in explaining the innovative competencies of hotel marketing employees. Several indices that are used as a reference for the assessment of model fit are presented in Table 3.

Table 3
Goodness of Fit Standart

Goodness of Fit Measures	Cut Off Value
Chi Squares	< 106,395
GFI	≥ 0,8
RMR	≤ 0,08
RMSEA	< 0,08
AGFI	≥ 0,8
NFI	≥ 0,8
CFI	≥ 0,8
IFI	≥ 0,8
PNFI	0,60 – 0,90
PGFI	0,50 – 1,00

Source: Malhotra (2010), Lin, *et. al.,* (2014) dalam Malvin (2018)

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After the model fit criteria are obtained, the next step is to test whether the construct measurement indicators are valid. First, it must be seen whether the indicator is statistically significant. The second step looks at the convergent validity or loading factor value of each indicator. The criteria for convergent validity value of 0.70 are considered to have good validity, while convergent validity of 0.50-0.60 is still acceptable for early-stage research (Ghozali, 2017). Instrument items with a small loading factor will be removed so that the results of the Goodness of Fit test will be better. After removal, a repeat factor analysis is performed.

CFA test results on innovative competency measurement instruments show fit results, although some criteria have not yet been met (see Figure 3 and Table 4). The constructs of innovative behavior in this study were tested using Confirmatory Factor Analysis (CFA) and obtained RMSEA 0.094 (moderate), RMR 0.037 (fit), Comparative Fit Index (CFI) 0.901 (fit), Tucker-Lewis Index (TLI) 0.891 (moderate), and NFI 0.837 (moderate).
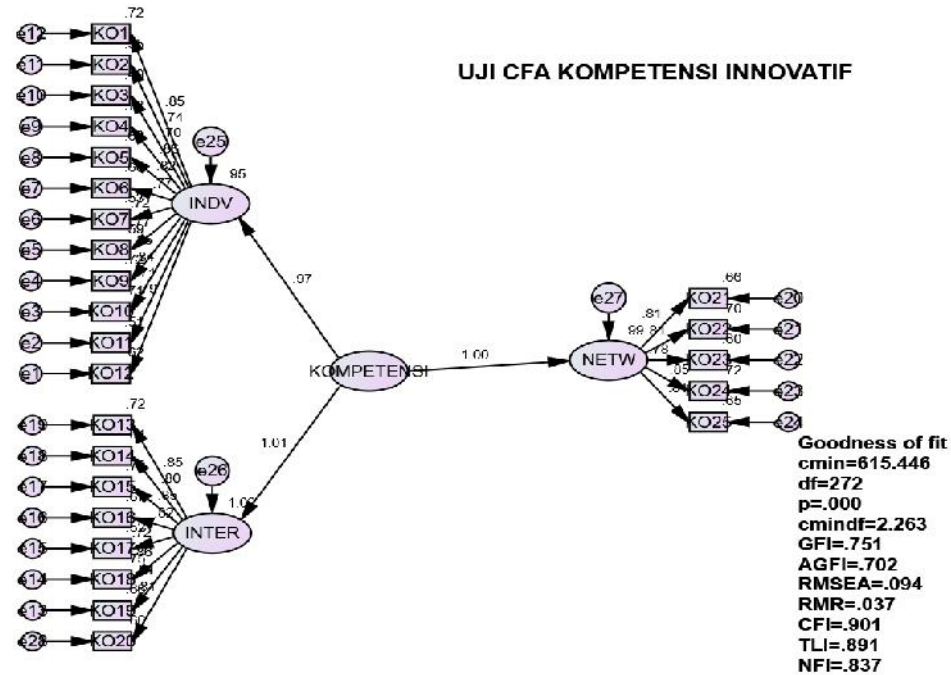
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Figure 3. CFA Analysis Results

Table 4
Goodness of fit test (Test Model)

Goodness of Fit Measure	Index	*Cut off*	Explanation
Chi-square of estimate model	615,446	< 106,395	Not fitted
Probability Level (p)	0,000	> 0,05	Not fitted
Goodness of Index (GFI)	0,751	≥ 0,8	Not fitted
Adjusted Goodness of Index (AGFI)	0,702	≥ 0,8	Not fitted
RMSEA	0,094	≤ 0,08	Moderate
RMR	0,037	≤ 0,08	Fit
Comparative Fit Index (CFI)	0,901	≥ 0,8	Fit
Tucker-Lewis Index (TLI)	0,891	≥ 0,9	Moderate
NFI	0,837	≥ 0,9	Moderate

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Furthermore, the analysis of innovative competency measurement instrument items using CFA shows good results. All items from the innovative competency construct have significant validity and have a high loading factor estimation value, which is between 0.701 - 1.012. Thus all items can be declared to have high validity.

Table 5

Loading factors Item Innovative Competency Instruments (Standardized Weights)

			Estimate
INDV	<---	KOMPETENSI	.973
NETW	<---	KOMPETENSI	.995
INTER	<---	KOMPETENSI	1.012
KO12	<---	INDV	.790
KO11	<---	INDV	.713
KO10	<---	INDV	.841
KO9	<---	INDV	.849
KO8	<---	INDV	.767
KO7	<---	INDV	.725
KO6	<---	INDV	.772
KO5	<---	INDV	.824
KO4	<---	INDV	.857
KO3	<---	INDV	.701
KO2	<---	INDV	.745
KO1	<---	INDV	.846
KO19	<---	INTER	.812
KO18	<---	INTER	.864
KO17	<---	INTER	.721
KO16	<---	INTER	.820
KO15	<---	INTER	.853
KO14	<---	INTER	.803
KO13	<---	INTER	.848
KO21	<---	NETW	.811
KO22	<---	NETW	.839
KO23	<---	NETW	.776
KO24	<---	NETW	.850
KO25	<---	NETW	.806
KO20	<---	INTER	.811

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Discussion

The importance of change and innovation in organizations to cope with rapidly changing business environments is increasingly emphasized. Innovation refers to the pursuit of goal-oriented and systematic change by organizations (Drucker, 1985). No exception in the hotel industry, innovation activities are needed to ensure the sustainability of the hotel industry. The hotel industry is currently competing through innovative performance that can create added value for organizations and individuals. Investing in innovation is the same as holding options for the future, and organizational innovation is a source of sustainable competitive advantage for companies (Berraies, Chaher, & Yahia, 2014). Therefore, efforts to identify or measure innovative competencies are significant. This study aims to develop innovative competency measurement instruments by involving indicators of individual conditions, interpersonal, and social networks. These three indicators are expected to explain the innovative competencies of hospitality employees. The accuracy of developing measurement instruments is essential to be studied so that the instruments can measure the innovative competencies of hospitality marketing employees. Furthermore, the measurement results can be used as a reference in the competency development plan for hospitality employees.

The development of this measurement instrument involves experts in the language and hospitality fields to ensure the suitability of the measuring instrument's content. The results of the comparability and similarity level assessment of five experts revealed that there was only a slight difference in the language on the scale of adaptation, and there were no significant, meaningful issues between the two versions (original and development) although the terms used may differ. In theory, the re-translated instrument items might differ from the original questionnaire in the assumed linguistic form and the meaning conveyed. Ideally, the corresponding items have similar meanings and similar forms of language; however, the similarity of meaning takes precedence over the similarity of forms (Sperber, 2004). Thus the innovative competency measuring instrument can be stated as a measurement tool that has the same meaning as the original version.

Furthermore, innovative competency measurement instruments are validated using Confirmatory Factor Analysis (CFA) analysis, the CFA analysis in this study uses the help of AMOS version 2.2. The

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results of this study reveal that innovative competencies can be explained by indicators of individual conditions, interpersonal, and social networks. This result is evidenced by the acquisition of goodness of fit test scores with good results (fit). The findings of this study also confirm that the higher or more positive the individual, interpersonal, and social network conditions of employees, the higher their innovative competence. Previous studies also stated the same thing (Ojedokun, 2012; Seo, Kim, Chang, & Kim, 2015), the study's findings suggest that positive interpersonal effects on individual innovative abilities. Besides, when referring to the acquisition of the most significant factor loading of the three indicators, the interpersonal indicator has the highest factor loading. In another study (Khan & Akhter, 2019), interpersonal communication skills also play a role in improving one's innovative abilities. Other interpersonal characters that need attention include collaboration, work initiatives, leadership, and problem-solving abilities.

Another indicator that has a significant role in enhancing innovative competence is social networking. Usually, someone who has a low social network has a high innovation performance; conversely, an individual with a high social network will have a low innovation performance (Jokisaari & Vuori, 2014). New employees in a company that has limitations in social networking usually tend to consider alternative ways of doing work, as demonstrated by innovative performance. It seems that newcomers not only seek information from others in the organization, as is usually examined in previous socialization research (for example, Cooper-Thomas & Burke, 2012), but they also provide information to others and suggest innovative ideas at work. The characteristics of having social networking capabilities include being able to apply ethical values in relationships, considering the social impact of all actions, being able to collaborate with society, having foreign language skills, and having social networking in local, regional, and international environments. Other similar studies have also confirmed that building heterogeneous social networks will be able to improve innovative performance (Etriya, Scholten, Wubben, & Omta, 2019). Similarly, Mutsvangwa-Sammie, Manzungu, and Sizib (2017) revealed that the planting of social networks is an essential factor in creating innovator profiles.

The last indicator or the last dimension that has a vital role in developing innovative competencies is the individual's condition. These indicators include having the authenticity of ideas, thinking critically,

having a broad perspective, being able to utilize resources optimally, having high enthusiasm, having a high work ethic, being brave to take risks, and visionary. This finding is similar to previous studies that revealed that education, resources, social networking, gender, and enthusiasm were identified as essential attributes of an innovator (Mutsvangwa-Sammie et al., 2017). Innovative competency indicators need to be included in the education and training curriculum both in industry and in the education world. Thus, it can be understood that innovative competencies can be developed by developing individual, interpersonal, and social networking conditions of employees. The results of this study have implications for educational practitioners and industry practitioners to be able to develop individual abilities that include personal, interpersonal, and social networking conditions. In the context of education, students need to be equipped early in the process of forming these abilities to form innovative individual characteristics. Meanwhile, in the context of the industrial world, a set of education and training programs for employees needs to be prepared in order to improve the innovative abilities of employees. Achievements in the abilities of each indicator must be included in the education and training curriculum for both students and hospitality employees.

Conclusion

The innovative competency measurement instrument for marketing employees in hospitality shows a multidimensional nature in measuring innovative competence in the workplace with three dimensions, namely the individual dimension, the interpersonal dimension, and the social network dimension. Validity testing using Confirmatory Factor Analysis (CFA) shows that this scale has a high value of validity and reliability of items. The calculation results show that the constructed model of the innovative competency scale is declared fit. The results of the item calculation show that the innovative competency measurement instrument has significant validity with a high estimated loading factor value, which is between 0.701-1.012. The results of this study indicate that all items in the innovative competency measurement instrument can be used to measure the innovative competency of Sales Marketing employees in hospitality. The results of this study can also be a reference in developing innovative capability questionnaires for employees in other industrial sectors.

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