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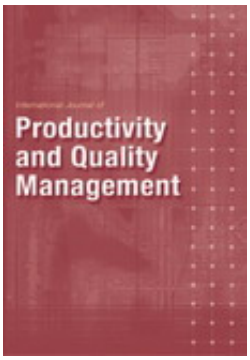

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Determinants for labour productivity improvement in hotel service: empirical evidence from Vietnam

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Abstract: Labour productivity improvement is often regarded as the major driver for business development, especially in emerging economies. This paper presents the results of an empirical study to investigate the determinants for labour productivity improvement in hotel service in Vietnam. Statistical techniques such as ANOVA, regression and path analysis are applied to analyse data gathered from 122 hotels in Da Nang – a tourism-based city of Vietnam through a questionnaire survey. The analytical results indicate the important roles of both external and internal factors for hotel labour productivity improvement in hotel service in Vietnam. Such factors as the availability of labour force, labour quality, leadership style, management practices, technology application, and capital allocation are found as the critical determinants for labour productivity improvement in hotel service in Vietnam. The analytical results suggest several solutions to hotel managers and local government for labour productivity improvements by enhancing business environment together with focusing on different internal perspectives such as technology application and capital allocation.

Keywords: labour productivity improvement; hotel service; Vietnam; empirical study.

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1 Introduction

Emerging economies, conceptualised by rapid growing perspectives, bring about strategic opportunities for business development via offering collaboration chances, opening for international markets and attracting huge financial investment (Hoskisson et al., 2000; Peng et al., 2008; Phan et al., 2019; Allameh, 2021). Besides, the increasing level of internationalisation process provides emerging-economy firms with better capacity to raise the presence in developed markets (Keen and Wu, 2011). By providing development opportunities for firms, emerging economies can improve the possibility of expanding market, creating more customers and rising labour productivity. Nevertheless, emerging economies encounters the problem of high volatility accompanied with higher economic growth (Arellano, 2008; Kumar et al., 2020) which would result in negative consequences. Conclusively, emerging economies bring about opportunities and also threats for firms in the modern context. That arises the need of enhancing the firm performance with the view to developing and supervising business in institutionally and culturally diversified environments.

To achieve high performance in business, labour productivity improvement should be focused in the global transformation era. Labour productivity results in competitive advantage for forms which contributes to the strategic development impetus for governments and companies (ILO, 2020). Scholars have concentrated on the growth of labour productivity as an important indicator of national economic power. Moreover, productivity has an essential role in enhancing labour-management collaboration, worker concentration and contributing to long-term strategies in an economy (Skinner, 2014; Koss and Lewis, 1993; Tangen, 2005; Audi and Ali, 2017; Abdelalim et al., 2019). Recently, labour productivity is becoming more essential due to the fact that development resources are limited and lowering the contribution to development (Chatzimichael and Liasidou, 2019; Hanc, 2019). Improving productivity should be regarded as a major determinant of sustainable economic growth by optimising the organisational resources (ILO, 2020) or in other words, human resource, capital resource, technological resources … should be included in the productivity measurement.

Vietnam is often recognised as an emerging economy in the South East Asia with comparative high growth rate (average 6.5% during 2015–2020), according to World Bank (2021). The country ranks 37th in world largest economies in 2020 measured by nominal gross domestic product (GDP) by World Bank (2021). In Vietnam, the leading service sectors comprise of retailing (25% GDP contribution in 2019), finance, banking and insurance (13%), real estate (11%) and tourism service (9%) according to Vietnam National Productivity Institute (2019). Nevertheless, statistics showed that service sector, despite large development in Vietnam economic structure, the labour productivity of this sector remains a 3% increase in the previous three years without significant breakthroughs (Vietnam National Productivity Institute, 2019) except for only finance and banking service. Tourism has been identified as potential leading service in Vietnam at 2030 with an expected GDP contribution of 7–9% in 2030. Historically, there divided three periods in tourism development:

1 1960–1975 – politically-based tourism

2 1976–1990 – economic sector recognition

3 after 2000 – impetus of economic growth (Truong, 2013).

Following the development of tourism, hotel service became an important role in providing accommodation and other recreation options (Arbelo-Pérez et al., 2017; Simpao, 2018; Zhang et al., 2020). Hotel service is considered to be a fast-growing business in Vietnam since 1990 when the number of hotel and room exhibit 350 and 16,700 respectively. These numbers recently have increased exponentially to approximately 30,000 hotels with 650,000 rooms by 2019, as estimated by Vietnam National Administration of Tourism (2021). However, due to the fast-developing speed, problematic issues in quality management, risk allocation and sustainable growth may arise for the hotel service in Vietnam (Tran et al., 2018; Nguyen et al., 2019). Previous studies indicate several issues in hotel service in Vietnam such as ineffective management, unstable quality system, low customer retention, etc. Productivity is also an issue for effective management in Vietnamese hotel service. Statistics show that, while the number of hotel and incoming visitors is constantly increased in Vietnam (before the COVID-19 pandemic), the firm's profits and other efficiency's indicators are stagnation since 2015. As presented in Vietnam National Productivity Institute. (2019) 'Vietnam Productivity Report', Vietnam National Productivity Institute (2019), the speed of development for the national productivity has been slowed down compared to several ASEAN countries. Therefore, the strategic goal of enhancing labour productivity is considered in the high priority in Vietnam (Nguyen et al., 2020). There are more than four million labours (approximately 7% of total national workforce) are working in the hospitality industries including hotel service in Vietnam by 2019. Therefore, the labour productivity improvement in hotel service particularly would sharply contribute to the better economic performance and market performance of service business (Phan and Matsui, 2011; Nguyen and Nguyen, 2019). Scholars over the world have indicated that hotel labour productivity is impacted by numerous determinants such as education, skill level, management system (Hu and Cai, 2004; Simpao, 2018; ILO, 2020; Zhang et al., 2020; Tavitiyaman et al., 2021). However, there are not so many empirical evidences on determinants for productivity improvement in hotel service in emerging economies such as Vietnam. Although numerous studies on labour productivity at the macroeconomic level have been conducted in developing countries including Vietnam, the number of empirical studies on labour productivity at the firm level are very limited. To fill the gap in the productivity literature, our study is conducted to investigate the current situation of labour productivity and determinant for labour productivity improvement in the hotel services in Vietnam which is considered as one of the striking fast-growing businesses. While previous studies were mostly based on statistical data collected from different government agencies in Vietnam, this study focuses on labour productivity at the business level and investigate the labour productivity improvement determinant based on the perception of hotel managers and employees. This study adopts the concept of productivity suggested by ILO (2020) and categorises the labour productivity improvement determinants into two groups: external factors and internal factors. The authors focus in the main research questions concerned with interrelationship between external and internal factors and identification of direct and indirect determinants for labour productivity improvement. Statistical techniques such as descriptive analysis, analysis of variance, correlation analysis and path analysis are used to analyse data collected from 122 hotels in Vietnam and the analytical results indicate the important

roles of both external and internal factors for hotel labour productivity improvement in hotel service. Some factors such as the availability of labour force, labour quality, leadership style, management, technology application and capital allocation are found as the critical determinants for labour productivity improvement in hotel service in Vietnam. The analytical results suggest several solutions for hotel managers and local government for labour productivity improvements by enhancing business environment together with focusing on different internal perspectives such as technology application and capital allocation.

The remainder of this paper presents the literature review and analytical framework, which is followed by the data collection, measurement test and hypothesis testing. The last sections present the important findings, implications, limitations of this study, and final conclusion.

2 Literature review

Conceptually, productivity is widely considered as the financial ratio of quantity of output to quantity of input used (OECD, 2001) or the measurement of organisational efficiency in producing output without increasing input (ILO, 2020). Labour is an important component of input side in productivity calculation. Similarly, labour productivity can be regarded as the working capacity of the labour force in order to enhance product quantity (Freeman, 2008; Allameh, 2021). The measurement for labour productivity would concern about the division of output and quantity of labour employed (OECD, 2001). According to Damanhouri and Rana (2017), labour productivity can be approached from two perspectives:

1 quantitative approach

2 administrative approach.

Moreover, the definition of labour productivity is greatly related to the 'efficiency' and 'effectiveness' of labour management in order to enhancing the usage of available resources or better conversion of input factors to output factors at company level (Kumar et al., 2020; Murali and Prabukarthi, 2020; Khan et al., 2020; Sfreddo et al., 2021).

Nevertheless, labour productivity in service sector is more challenging than labour productivity in manufacturing sector (Schmenner, 2004; Datta et al., 2005; Freeman, 2008). According to Freeman (2008), in service sector, labour productivity can be dependent on quality of labour, unit labour cost and labour input measures which would constantly vary among firms, economies and countries. Therefore, in order to precisely analyse service labour productivity, it is essential that the influencing factor must be determined (Damanhouri and Rana, 2017; Sony and Mekoth, 2019). There are numerous determinants were mentioned in previous studies on labour productivity in service sector. Particularly, for hotel service, labour productivity is also an essential indicator illustrating the optimal operation and due to the labour intensiveness of the service, the importance is gradually increasing (Hu and Cai, 2004). Similar to other services, labour productivity in hotel service should be defined as the ratio of outputs to inputs which measures the efficiency of employing human resource by the hotels (Hu and Cai, 2004). Therefore,

hotel managers aim at improving labour productivity. It is also difficult to determine the influencing factors of hotel labour productivity (Kilic and Okumus, 2005; De Jorge and Suárez, 2014; Simpao, 2018; Abdelalim et al., 2019; Zhang et al., 2020). The determinants are constantly varying and can be categorised by several aspects:

1 external and internal factors (ILO, 2020; García-Pozo et al., 2015; Hu and Cai, 2004)

2 labour productivity increasing and decreasing factors (Kilic and Okumus, 2005; Arbelo-Pérez et al., 2017).

Table 1 Summary of related empirical studies on labour productivity improvement in hotels

No.	*Author*	*Data collection and analytical methods*	*Main findings*	*Labour productivity determinants*
1	Tan and Despotis (2021)	Data envelopment analysis (DEA) and bootstrapped truncated regression	1 The hotels in UK are efficiently operating 2 The internal factors and external factors can have impacts on the hotel efficiency 3 Hotels in the UK may consider the strategy of cost reduction, business diversification and improving labour productivity	• External factors: number of international guests, tourism expenditure, tourism receipts, capital • Internal factors: number of employees, fixed assets, cost of goods sold, operating revenue, hotel size, capitalisation
2	Zhang et al. (2020)	Panel data, stochastic frontier analysis (SFA) 450 hotels in China	1 Level of tourism specialisation increases; the efficiency of the hotel industry experiences progress in an inverted U-shape 2 Tourism specialisation growth marginal benefit declines in the context of more intense market competition 3 Inverse relationship among market competition, tourism specialisation and hotel efficiency	• Output: total revenue • Input: capital, labour • Explanatory variables: tourism specialisation, market competition • Control variables: foreign trade dependent degree, number of five-star hotels, anti-corruption policy, GDP, population size, transportation accessibility, SARS pandemic

Table 1 Summary of related empirical studies on labour productivity improvement in hotels (continued)

No.	*Author*	*Data collection and analytical methods*	*Main findings*	*Labour productivity determinants*
3	Simpao (2018)	Questionnaire, frequency distribution, percentage and weighted mean, ranking and Mann-Whitney U manner. 100 managers and employees from 41 hotels in Philippines	1 Labour productivity improvement should be handled with human resource enhancement 2 Number of labour may not assure hotel success, it is dependent on the employees' efficiency 3 Technological advancement, lack of career path and retention program, lack of awareness on the effect of productivity 4 Labour productivity measurement and control standards should be implemented in hotel management	• Internal factors only: material management, human resource management, leadership management
4	Poldrugovac et al. (2016)	Data envelopment analysis (DEA) and output-oriented BCC model, 105 hotels in Croatia	1 Hotels in Croatia has been in good efficiency 2 Revenue maximisation and cost minimisation are the two options for increasing efficiency 3 The easiest way to increase occupancy is to lower the selling price of services	• Input: room expenses, F&B expense, labour expense, energy expense, number of stars, number of rooms • Output: total revenue, occupancy rate
5	García-Pozo et al. (2015)	Semi-structured questionnaires, Cobb-Douglas production function, 173 hotels in Andalusia, Spain	1 Hotel industry in Andalusia should be enhanced in future sustainable development 2 Eco-innovative practice implementation (3.66 applied in average) would raise returns on labour productivity to 29.90% 3 Control variables are included in the econometric analysis, the percentage of the increase in productivity reaches 8.15%	• Internal factors: eco-innovative practice, number of stars, strategic plan • External factors: position in capital cities, foreign capital

Table 1 Summary of related empirical studies on labour productivity improvement in hotels (continued)

No.	*Author*	*Data collection and analytical methods*	*Main findings*	*Labour productivity determinants*
6	Arbelo-Pérez et al. (2017)	Panel data from 2009 to 2013, stochastic frontier methodology (SFA), 838 hotels in Spain	1 The overall average profit efficiency is 50.36%, which means that on average a hotel could increase its profit by 49.64% if operating at an efficient frontier 2 Five-star hotels are more profit efficient than three-star hotels 3 The hotels that are the most cost efficient have the lowest profit efficiency and vice versa	• Output: operating revenue, other operating revenue • Input: labour, material price, operating cost, capital price • Control variables: number of stars
7	De Jorge and Suárez (2014)	Total factor productivity index of Malmquist, data envelopment analysis (DEA), 303 hotels in Amadeus, Spain	1 The concentration market share to achieve efficiency gains 2 A curvilinear (U) shape between efficiency and size of the hotel 3 A higher degree of organisational autonomy is positively related to efficiency	• Outputs: sales, market share, hotel efficiency • Inputs: labour cost, market concentration, number of beds, number of stars, number of subsidiaries
8	Shang et al. (2010)	Stochastic data envelopment analysis (SDEA), 57 hotels in Taiwan	1 Location has a positive impact on the hotel efficiency score 2 Age has a negative impact on the hotel efficiency score 3 Management style has no impact on hotel efficiency score 4 E-commerce has no relationship with hotel efficiency	• External factors: location, e-commerce conditions • Internal factors: management style, age, number of employees, number of rooms, revenue from room service, revenue from F&B service, operating expense

Table 1 Summary of related empirical studies on labour productivity improvement in hotels (continued)

No.	*Author*	*Data collection and analytical methods*	*Main findings*	*Labour productivity determinants*
9	Kilic and Okumus (2005)	Self-administered questionnaire, one-way analysis of variance (ANOVA), 51 hotels in Northern Cyprus	1 Hotel managers in Northern Cyprus have a narrow view of productivity 2 Labour productivity is more input-oriented in Northern Cyprus	• Highly influenced: staff recruitment, staff training, meeting guest expectations, service quality • Slightly influenced: crises, technology, marketing and forecasting
10	Hu and Cai (2004)	Survey, data envelopment analysis, 242 motels and hotels in the State of California, the USA	1 Managerial capability tends to be an important underlying factor that affects a hotel's productivity 2 The larger size of a hotel was associated with higher labour productivity 3 Hotel performance can be affected by external factors	• Average daily rate, occupancy rate, number of rooms, average manger wages, average staff wages

Based on empirical literature review, several remarks on labour productivity improvement determinants can be summarised as follows:

- Labour productivity improvement plays an important role in enhancing the hotel performance. It could be the outcome that hotel managers should target in order to producing better economic results. Hotel service is labour-intensive and dependent on the quality of labour for business performance.
- The characteristics of the hotels (size, revenue, stars, owners, …) would significantly impact on the level of labour productivity improvement and the hotel performance.
- Productivity improvement determinants are often categorised into external and internal factors. External factors are the factors that hotel managers cannot affect the changes. Internal factors relate to the hotel operations and can be decided by hotel managers (ILO, 2020).

3 Analytical framework

Empirical research on labour productivity at business level has grown in importance for practitioners and academics similarly, as it gives the sort of knowledge necessary to attain superior quality in a global market (Goel et al., 2017). As more practitioners, the process

of enhancing working efficiency should be the priority in business (Arbelo-Pérez et al., 2017). Impetus for improving labour productivity has been identified in numerous researches. In this study, the authors investigate the determinants for the labour productivity improvement in hotel service in Vietnam by adopting the framework of ILO (2020) which is considered to be the holistic approach in order to provide better insights about this process. Analytical framework is presented in Figure 1.

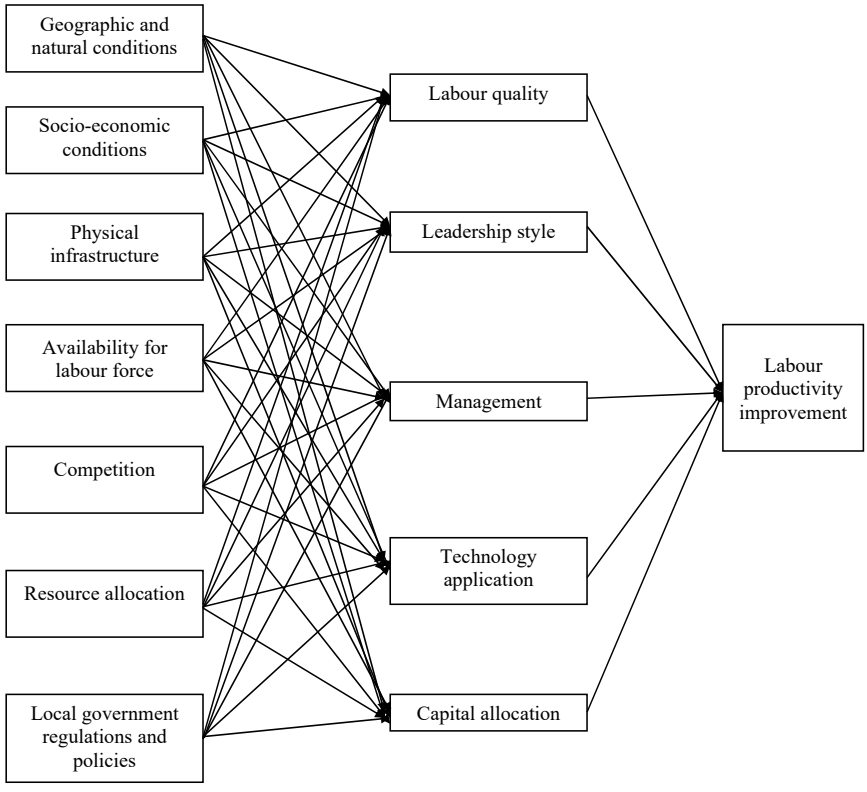
Table 2 Summary of hotel service labour productivity determinant

Factors	*Definition*	*Sources*
	External factors	
Geographical and natural conditions	Refers to the natural resources available in the local area which have impact on the economic environment, business environment and political system	Mohanty (1992), Chadwick et al. (2013) and Goel et al. (2017)
Socio-economic conditions	Relates to the unique characteristics of the local area and represents the routines in living, working and spirit of the citizens	Audi and Ali (2017), Goel et al. (2017), Damanhouri and Rana (2017) and ILO (2020)
Physical infrastructure	Represents the system of physical structures required for the economy to function and survive	Sharma and Sehgal (2010), Simpao (2018) and ILO (2020)
Availability of labour force	Refers to the source of labour supply who are qualified for enterprise requirement in terms of quantity and quality	Freeman (2008), Damanhouri and Rana (2017) and ILO (2020)
Resource allocation	Refers to the process of sharing the development resources and stipulating the market in order to ensure the achievement of economic goals	Watkins et al. (2009) and Goel et al. (2017)
Competition	Relates to the level of interaction, clash and struggle in the market with the view to acquiring more market share and qualifying for customer's requirements	Higón et al. (2010), Goel et al. (2017), Borkovic and Tabak (2018) and ILO (2020)
Local government regulations and policies	Refers to the impacts from the local authorities on the implementation of policies on regulating business activities	Sharma and Sehgal (2010), Mia and Soltane (2016), Goel et al. (2017), Borkovic and Tabak (2018), Lamadon et al. (2019) and ILO (2020)
	Internal factors	
Labour quality	Refers to the quality of the labour force within the hotel who directly perform the task in the financial year	Zidan (2001), Nafukho et al. (2004), Kilic and Okumus (2005), Freeman (2008), Goel et al. (2017), ILO (2020) and Zhang et al. (2020)
Leadership style	Refers to the leadership direction and decisions in establishing and supervising the productivity culture within the hotel	Arbelo-Pérez et al. (2017), Damanhouri and Rana (2017) and Coulson-Thomas (2018)

Table 2 Summary of hotel service labour productivity determinant (continued)

Factors	*Definition*	*Sources*
	Internal factors	
Management	Refers to the ability to utilise the development resources within the hotel in order to ensure the planning, organising, leading and controlling process	Freeman (2008), Sharma and Sehgal (2010), Damanhouri and Rana (2017) and ILO (2020)
Technology application	Refers to the level of flexibility and fastness of adopting modern technology into business activities for enhancing the productivity	Damanhouri and Rana (2017) and Acemoglu and Restrpo (2019)
Capital allocation	Refers to the process of establishing capital distributing and investing hotel financial resource in order to assure labour productivity	Malikane and Chitambara (2017), Goel et al. (2017) and Asada (2020)

Figure 1 Proposed analytical framework



There are two categories of determinants for labour productivity improvements are investigated in this study: seven external factors and five internal factors that is summarised in Table 2.

4 Hypothesis statement

External factors have significant impacts on the process of labour productivity improvement by creating business environment for the hotels to operate. Therefore, labour productivity improvement should be radically affected by the external factors (Tangen, 2005; Goel et al., 2017; Hanc, 2019; ILO, 2020). Hotel managers cannot ignore the importance of these determinants and need to include several striking ones into the research framework.

Hypothesis 1 Labour productivity improvement is significantly impacted by external factors.

With each of the hypothesis, there divided sub-hypothesis concerning with specific factor that is included in framework. Firstly, *geographical and natural conditions* provide the advantages/disadvantages for businesses to be developed (Gundecha, 2012). The availability of natural resources, geographic location, labour supply and technology. The local externalities should be utilised in order to provide innovative facilities and recreation for tourists and the hotel would be beneficial (Shang et al., 2010). Generally, the *geographical and natural conditions* are important factor in creating potential efficiency, including: capital, locational and labour productivity advantage.

Sub-hypothesis 1.1 There is a close relationship between labour productivity improvement and geographical and natural conditions.

Socio-economic conditions are referred to the demographic situations and other human-based factors which can be considered as the mutual culture of people living in the same area (Kelley and Schmidt, 2005). The socio-economic conditions con tribute to the sustainable development of the whole economy (Audi and Ali, 2017). In terms of labour productivity, socio-economic may affect the routines of working, the average quality of labour and the working spirit (Chen and Chang, 2013; Assaf and Agbola, 2012; Audi and Ali, 2017; Bore et al., 2017; Goel et al., 2017).

Sub-hypothesis 1.2 There is a close relationship between labour productivity improvement and socio-economic conditions.

Physical infrastructure is regarded as the basic condition for economic development in nations and cities (Simpao, 2018). Therefore, it would provide the basic conditions for business to operate. ILO (2020) indicated that the growth in national economy depends on the situation of the infrastructure in order to foster the operations. For labour productivity, sufficient *physical infrastructure* paves the way for higher working condition for hotel workforce (Sharma and Sehgal, 2010; Assaf and Cvelbar, 2011; Yang, 2016).

Sub-hypothesis 1.3 There is a close relationship between labour productivity improvement and physical infrastructure.

Labour force can be the decisive factor in the process of labour productivity improvement. The market for labour should be invested and established effectively in order to expand the quantity and the quality of employees (ILO, 2020). Labour productivity is primarily linked with the *availability of labour force* which enables the hotels to recruit better-qualified employees. Therefore, labour productivity is affected by

the availability of labour force (Freeman, 2008; Damanhouri and Rana, 2017; ILO, 2020).

Sub-hypothesis 1.4 There is a close relationship between labour productivity improvement and availability of labour force.

Economic development depends on resource and labour productivity is of no exception. As the resources are scarce, the process of allocating those is important and there needs to be focused factors (Watkins et al., 2009; Goel et al., 2017). Firms with better *resource allocation* are academically more efficient in labour productivity (Freeman, 2008).

Sub-hypothesis 1.5 There is a close relationship between labour productivity improvement and resource allocation.

The competition in the market creates motivation for economic development and labour productivity improvement in corporate level (ILO, 2020). This relationship would be represented through: level of competition among firms, customer requirements for the firms, number of firm entry the market (Lamadon et al., 2019). *Competition* makes the market more profitable and the hotels need to improve their labour productivity in order to take the competitive advantage (Higón et al., 2010; Assaf and Cvelbar, 2011; Goel et al., 2017; Borkovic and Tabak, 2018).

Sub-hypothesis 1.6 There is a close relationship between labour productivity improvement and competition.

Local government regulations and policies are related to the intervention of local authorities which may lead to increase/decrease labour productivity (Goel et al., 2017). Moreover, the role of regulating in the marketing should have impact on the economic development (Mia and Soltane, 2016).

Sub-hypothesis 1.7 There is a close relationship between labour productivity improvement and local government regulations and policies.

Beside the external factors, internal factors are important for labour productivity improvement. Scholars indicated that the internal factors would be directly influence the process of labour productivity improvement (Sharma and Sehgal, 2010; Goel et al., 2017; Simpao, 2018).

Hypothesis 2 Labour productivity improvement is significantly impacted by internal factors.

Labour productivity is related to the human resource management of the firms (Zidan, 2001). Better human resource may lead to higher labour productivity (Freeman, 2008). Generally, *labour quality* is considered to be a major determinants of labour productivity improvement in corporate level.

Sub-hypothesis 2.1 There is a close relationship between labour productivity improvement and labour quality.

Leadership style would be a major determinant of labour productivity improvement (Coulson-Thomas, 2020), which would be decisive in the process of increasing this indicator. Particularly, *leadership style* refers to the leadership direction and decisions in establishing and supervising the productivity culture within the hotel (Arbelo-Pérez et al., 2017; Damanhouri and Rana, 2017; Coulson-Thomas, 2018).

Sub-hypothesis 2.2 There is a close relationship between labour productivity improvement and leadership style.

Management would be involved in four stages of planning, organising, leading and controlling in businesses (Tracey and Hinkin, 1994). In terms of labour productivity, the management procedures may contribute to the human resource relations, focus on the supervising in order to assure the labour productivity goals (Sigala et al., 2005; De Jorge and Suárez, 2014).

Sub-hypothesis 2.3 There is a close relationship between labour productivity improvement and management.

Technology application have strong effects on organisational operations. With technological innovations, resources usage may be lowered and the products should be increased which represents an improvement in labour productivity (Hu and Cai, 2004; Acemoglu and Restrepo, 2019).

Sub-hypothesis 2.4 There is a close relationship between labour productivity improvement and technology application.

Capital can be considered as an important resource in a firm. Therefore, it also needs reasonable allocation in order to achieve economic results. Labour productivity can be beneficial with *capital allocation* policies, better budget allocated, higher labour productivity (Malikane and Chitambara, 2017; Borkovic and Tabak, 2017; Asada, 2020).

Sub-hypothesis 2.5 There is a close relationship between labour productivity improvement and capital allocation.

To test the hypothesis, the authors developed 13 measurement scales measuring external factors (seven scales), internal factor (five scales), and a scale measuring the level of productivity improvement in hotel business. These scales were adopted and adjusted from cited empirical literature as summarised in Table 2. The contents of measurement scale are presented in Appendix.

The next section present data collection and analyse for hypothesis testing.

5 Data collection and measurement test

5.1 Data collection

In this study, the authors collected data in Da Nang City which is considered to be the tourism centre in the middle of Vietnam. Da Nang is selected to study because of several reasons. Firstly, Da Nang has witnessed a steady increase in international tourists during the period from 2011–2019 (before the global COVID-19 pandemic), from 5.9 million in 2011 to 18 million in 2019 (Vietnam National Administration of Tourism, 2021). Moreover, statistics from Vietnam National Administration of Tourism (2021) indicated that the labour productivity of Da Nang City followed an upward trend from 2011 to 2019. The average growth rate maintained at 10% during the period, estimated approximately two times greater than average level of Vietnam. Comparatively, the growth rate is medium-scaled in the scope of Da Nang economy and cannot be compared to other sectors, such as transportation and storage (1.15%); information and

communication (3.48%) as well as non-state economic sectors (3.46%). This fact is considered to be a serious problem to the city's labour productivity development (Nguyen and Pham, 2021). With the serious impacts of COVID-19 pandemic, it is high time for Da Nang to implement procedures for enhancing labour productivity, especially in accommodation industry in a tourism-based city which ranked. There are 820 hotels located in Da Nang area, including 700 hotels rated from 1 star to 3 stars and 82 hotels belonged to 4 stars and 5 stars (Da Nang Department of Tourism, 2019).

Table 3 Characteristics of surveyed hotels

	Frequency	*Percentage*
Years of operations		
Under 2 years (newly-founded)	35	28.69%
3–4 years (experienced)	37	30.33%
5–8 years (influenced)	27	22.13%
Above 8 years (developed)	23	18.85%
Number of stars		
3–4 stars (luxury)	58	47.54%
1–2 stars (standard)	64	52.46%

Questionnaire survey is applied to capture the perception of hotel managers regarding the level of productivity improvement in hotel business over latest three years and the degree of external and internal factors, from hotel perspectives. Questionnaire survey was sent to 220 hotels during August–December 2020. These hotels were selected because they were all operating their normal businesses during COVID-19 pandemic and fully agreed to participate in our study. The authors finally received the feedback from 122 hotels and their demography is described in Table 3. The survey respondents were hotel managers and all the questionnaire items were evaluated in Likert five-point scale (1: strongly disagree and 5: strongly agree).

5.2 Measurement test

The first step in the data analysis process is the measurement test, which examine the reliability and validation of the collected data.

- Reliability test: Cronbach's was calculated with the accepted level is 0.6 as suggested in literature, indicating consistency between the items in a construct.
- Content validity: Content validity is ensured through extensive literature review about labour productivity improvement.
- Construct validity: Factor analysis is used to test whether items in a scale are measuring the same multivariate construct. For each measurement scale, factor loadings exceed 0.4, and the eigenvalues of all constructs are larger than 1.

The measurement test results show that all of measurement scales are valid and reliable and could be used for further hypothesis testing.

Table 4 Measurement test and descriptive analysis

Measurement scale	*Mean*	*STD*	*Cronbach's alpha*	*Eigenvalue (% of variance)*
Geographical and natural conditions	3.59	0.56	0.62	51.19
Socio-economic conditions	3.47	0.61	0.78	9.40
Physical infrastructure	3.58	0.58	0.84	7.54
Availability of labour force	3.48	0.59	0.78	6.16
Competition	3.60	0.56	0.60	5.21
Resource allocation	3.57	0.61	0.73	4.41
Local government regulations and polices	3.54	0.63	0.85	4.32
Labour quality	3.59	0.59	0.88	4.03
Leadership style	3.79	0.68	0.85	2.30
Management	3.72	0.65	0.86	2.15
Technology application	3.53	0.61	0.86	1.93
Capital allocation	3.43	0.61	0.70	1.36

The measurement test proves that all the collected data is valid and reliable as shown in Table 4.

5.3 Hypothesis testing

The hypothesis testing is conducted through several techniques as correlation analysis, regression analysis, and path analysis. First to be mentioned, path analysis has been widely utilised in economic or business administration studies (Yeung et al., 2005).

In this study, path analysis is applied to test the proposed framework, with regression analysis determining the significance of the relationships between the independent and dependent variables. Path coefficients between each independent variable (external and internal factors) and dependent variable (labour productivity improvement) are presented by standardised regression coefficients. Cited literature suggest that, in order to simplify the model prior to decomposition, all paths whose coefficients are not statistically significant at the 0.15 level or less should be eliminated (Flynn et al., 1995). The correlations between all pairs of variables are then decomposed into the sum of their direct and indirect effects.

Prior to conducting path analysis, a correlation analysis is conducted and the results are presented in Table 5 which show the correlation matrix. The coefficient between variables all less than 0.65 and mostly ranged between 0.3–0.5 indicating normal relationship.

In test the established hypotheses, six multiple regression models are developed and the results are presented in Table 6. We found that:

- *Labour quality*, *leadership style*, *management*, *technology application* and *capital allocation* explains 30% of the variability of *labour productivity improvement*.
- *Geographical and natural conditions*, *socio-economic conditions*, *physical infrastructure*, *availability of labour force*, *competition*, *resource allocation* and

local government regulations and policies explains 59% of variability of *labour quality*.

- *Geographical and natural conditions*, *socio-economic conditions*, *physical infrastructure*, *availability of labour force*, *competition*, *resource allocation* and *local government regulations and policies* explains 44% of variability of *leadership style*.
- *Geographical and natural conditions*, *socio-economic conditions*, *physical infrastructure*, *availability of labour force*, *competition*, *resource allocation* and *local government regulations and policies* explains 50% of variability of *management*.
- *Geographical and natural conditions*, *socio-economic conditions*, *physical infrastructure*, *availability of labour force*, *competition*, *resource allocation* and *local government regulations and policies* explains 53% of variability of *technology application*.
- *Geographical and natural conditions*, *socio-economic conditions*, *physical infrastructure*, *availability of labour force*, *competition*, *resource allocation* and *local government regulations and policies* explains 38% of variability of *capital allocation*.

Next, path coefficients are decomposed into the direct and indirect effects. The total effect presents the sum of the direct effect and indirect effects of one variable on others as summarised in Table 7 and the model fitness are presented in Table 8. Figure 2 summarises the direct effects among variables. The arrows present direct relation between two variables along with values of direct effect. The indirect effects to a variable are indicated by a series of forward-pointing arrows. Empirical literature suggests that the path having coefficient (absolute value) less than 0.15 should be removed. For instance, path coefficient between socio-economic conditions and leadership styles possesses the value of 0.06, so that the connecting arrow has been trimmed. The final model has following paths:

- Path 1: Availability of labour force → technology application → labour productivity improvement.
- Path 2: Resource allocation → technology application → labour productivity improvement.
- Path 3: Local government regulations and policies → technology application → labour productivity improvement.
- Path 4: Availability of labour force → capital allocation → labour productivity improvement.
- Path 5: Competition → capital allocation → labour productivity improvement.
- Path 6: Local government regulations and policies → capital allocation → labour productivity improvement.

Based on analytical results, we would conclude that the all hypotheses should be accepted indicating significant linkage between labour productivity improvement and external and internal factors.

Table 5 Correlation analysis

	Constructs											
Labour productivity improvement	1											
Geographical and natural conditions	0.35	1										
Socio-economic conditions	0.40	0.49	1									
Physical infrastructure	0.27	0.44	0.43	1								
Availability of labour force	0.30	0.4	0.52	0.45	1							
Competition	0.30	0.48	0.21	0.30	0.26	1						
Resource allocation	0.37	0.49	0.46	0.34	0.51	0.50	1					
Local government regulations and policies changes	0.26	0.46	0.39	0.53	0.37	0.40	0.56	1				
Labour quality	0.30	0.35	0.61	0.55	0.62	0.26	0.51	0.49	1			
Leadership style	0.25	0.46	0.38	0.45	0.33	0.41	0.55	0.56	0.55	1		
Management	0.37	0.51	0.42	0.41	0.55	0.45	0.58	0.52	0.58	0.71	1	
Technology application	0.48	0.43	0.33	0.34	0.59	0.39	0.61	0.51	0.55	0.49	0.72	1
Capital allocation	0.50	0.34	0.32	0.30	0.39	0.46	0.41	0.51	0.44	0.44	0.56	0.63

Note: The coefficients are significant at p-value of 1%.

Table 6 Summary of regression analysis

Dependent variable	*R-squared*	*Adjusted R-squared*	*F*	*P*	*Independent variables*	*B*	*T*	*P*	*VIF*
Labour productivity improvement	0.54	0.30	9.78	0.00	Labour quality	0.03	0.25	0.81	1.72
					Leadership style	–0.05	–0.04	0.67	2.19
					Management	–0.01	–0.04	0.97	3.26
					Technology application	0.28	2.25	0.03	2.60
					Capital allocation	0.34	3.25	0.01	1.76
Labour quality	0.77	0.59	23.23	0.00	Geographical and natural conditions	–0.16	–1.98	0.05	1.79
					Socio-economic conditions	0.32	4.13	0.00	1.70
					Physical infrastructure	0.24	3.01	0.00	1.69
					Availability of labour force	0.30	3.79	0.00	1.69
					Competition	0.01	0.19	0.85	1.54
					Resource allocation	0.13	1.46	0.15	2.09

Table 6 Summary of regression analysis (continued)

Dependent variable	*R-squared*	*Adjusted R-squared*	*F*	*P*	*Independent variables*	*B*	*T*	*P*	*VIF*
Labour quality	0.77	0.59	23.23	0.00	Local government regulations and policies	0.13	1.54	0.13	1.86
Leadership style	0.66	0.44	12.71	0.00	Geographical and natural conditions	0.10	1.11	0.27	1.79
					Socio-economic conditions	0.05	0.57	0.57	1.70
					Physical infrastructure	0.16	1.76	0.08	1.69
					Availability of labour force	–0.06	–0.66	0.51	1.69
					Competition	0.09	0.99	0.32	1.54
					Resource allocation	0.27	2.69	0.01	2.09
					Local government regulations and policies	0.24	2.47	0.02	1.86
Management	0.71	0.50	16.55	0.00	Geographical and natural conditions	0.15	1.65	0.1	1.79
					Socio-economic conditions	0.01	0.15	0.88	1.7
					Physical infrastructure	0.01	0.04	0.97	1.69
					Availability of labour force	0.29	3.36	0.01	1.69
					Competition	0.14	1.71	0.09	1.54
					Resource allocation	0.18	1.91	0.06	2.09
					Local government regulations and policies	0.18	2.04	0.04	1.86
Technology application	0.73	0.53	18.21	0.00	Geographical and natural conditions	0.09	1.09	0.28	1.79
					Socio-economic conditions	–0.13	–1.54	0.13	1.70
					Physical infrastructure	–0.07	–0.80	0.43	1.69
					Availability of labour force	0.41	4.97	0.00	1.69
					Competition	0.05	0.64	0.52	1.54
					Resource allocation	0.29	3.15	0.02	2.09
					Local government regulations and policies	0.21	2.41	0.02	1.86

Table 6 Summary of regression analysis (continued)

Dependent variable	*R-squared*	*Adjusted R-squared*	*F*	*P*	*Independent variables*	*B*	*T*	*P*	*VIF*
Capital allocation	0.62	0.38	10.08	0.00	Geographical and natural conditions	–0.04	–0.4	0.69	1.79
					Socio-economic conditions	0.08	0.85	0.40	1.7
					Physical infrastructure	–0.09	–0.89	0.38	1.69
					Availability of labour force	0.21	2.23	0.03	1.69
					Competition	0.31	3.40	0.01	1.54
					Resource allocation	–0.05	–0.49	0.63	2.09
					Local government regulations and policies	0.37	3.69	0.00	1.86

Table 7 Decompositions of path coefficients

Dependent variable	*Independent variables*	*Direct effect*	*Indirect effect*	*Total effect*
Labour productivity improvement	Geographical and natural conditions	0.00	0.00	0.00
	Socio-economic conditions	0.00	0.00	0.00
	Physical infrastructure	0.00	–0.05	–0.05
	Availability of labour force	0.00	0.20	0.20
	Competition	0.00	0.12	0.12
	Resource allocation	0.00	0.05	0.05
	Local government regulations and policies	0.00	0.16	0.16
	Labour quality	0.03	0.00	0.03
	Leadership style	–0.04	0.00	–0.04
	Management	–0.01	0.00	–0.01
	Technology application	0.27	0.00	0.27
	Capital allocation	0.32	0.00	0.32
Labour quality	Geographical and natural conditions	–0.17	0.00	–0.17
	Socio-economic conditions	0.31	0.00	0.31
	Physical infrastructure	0.24	0.00	0.24
	Availability of labour force	0.29	0.00	0.29
	Competition	0.02	0.00	0.02
	Resource allocation	0.12	0.00	0.12
	Local government regulations and policies	0.12	0.00	0.12
Leadership style	Geographical and natural conditions	0.13	0.00	0.13
	Socio-economic conditions	0.06	0.00	0.06
	Physical infrastructure	0.19	0.00	0.19

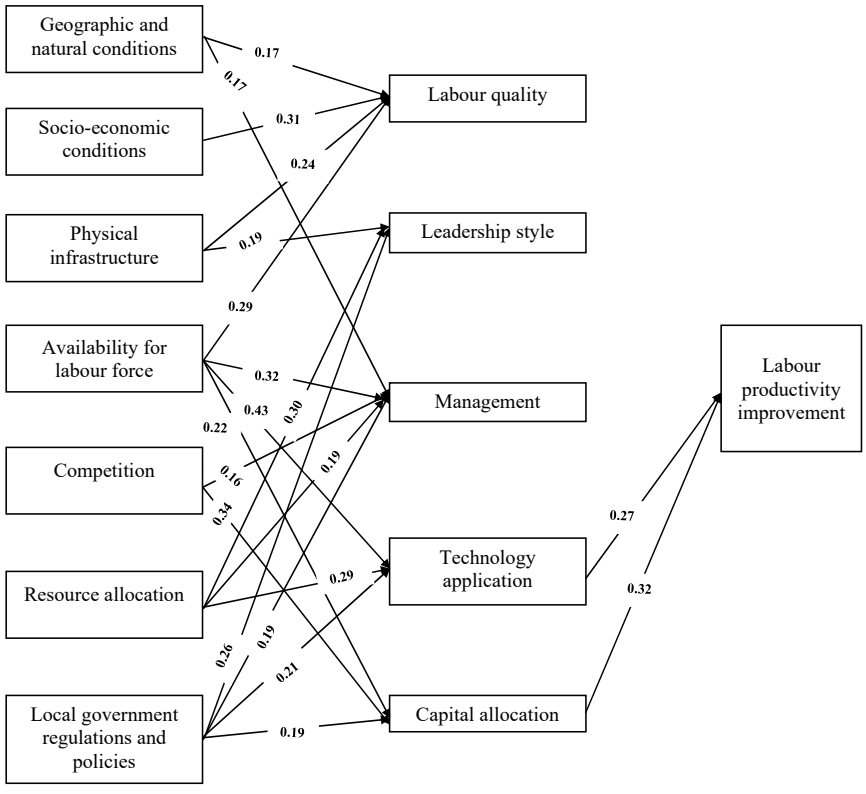
Table 7 Decompositions of path coefficients (continued)

Dependent variable	*Independent variables*	*Direct effect*	*Indirect effect*	*Total effect*
Leadership style	Availability of labour force	–0.07	0.00	–0.07
	Competition	0.10	0.00	0.1
	Resource allocation	0.30	0.00	0.3
	Local government regulations and policies	0.26	0.00	0.26
Management	Geographical and natural conditions	0.17	0.00	0.17
	Socio-economic conditions	0.01	0.00	0.01
	Physical infrastructure	0.00	0.00	0.00
	Availability of labour force	0.32	0.00	0.32
	Competition	0.16	0.00	0.16
	Resource allocation	0.19	0.00	0.19
	Local government regulations and policies	0.19	0.00	0.19
Technology application	Geographical and natural conditions	0.10	0,00	0.10
	Socio-economic conditions	–0.13	0.00	–0.13
	Physical infrastructure	–0.07	0.00	–0.07
	Availability of labour force	0.43	0.00	0.43
	Competition	0.06	0.00	0.06
	Resource allocation	0.29	0.00	0.29
	Local government regulations and policies	0.21	0.00	0.21
Capital allocation	Geographical and natural conditions	–0.04	0.00	–0.04
	Socio-economic conditions	0.08	0.00	0.08
	Physical infrastructure	–0.09	0.00	–0.09
	Availability of labour force	0.22	0.00	0.22
	Competition	0.34	0.00	0.34
	Resource allocation	–0.05	0.00	–0.05
	Local government regulations and policies	0.36	0.00	0.36

Table 8 Model fit summary

Model fit	*Recommended value*	*Value*
Chi-square		441.48
Comparative fit index (CFI)	≥0.90	0.91
Root mean square error of approximation (RMSEA)	0.00, 0.08	0.05
Normed fit index (NFI)	≥0.90	0.92
Incremental fit index (IFI)	≥0.90	0.91
Parsimony normed fit index (PNFI)	≥0.70	0.78

Figure 2 Model summary



6 Discussion, implications, and limitations

This study proposes and tests the analytical framework by conducting multiple regression models and path analysis. The results of hypotheses testing indicate several findings and implications which are summarised as the follows.

- Firstly, it can be inferred that external factors have indirect effects and the internal factor have direct effects on labour productivity improvement in hotel service in Vietnam. It would be contributed to establish a comprehensive view for labour productivity issue in Vietnam. External factors, despite not having direct influence of *labour productivity improvement*, they contribute considerably to the creation of business environment for the firms to operate (ILO, 2020). Therefore, the impact would be indirect but significant. This finding is consistent with Goel et al. (2017), Mia and Soltane (2016) and Kinfemichael and Morshed (2019).
- Secondly, there are differences among the influence level of the determinants. External factors, consistent with theories, have significant effects on labour productivity in corporate level (Sharma and Sehgal, 2010; Borkovic and Tabak, 2018; ILO, 2020). It also provides influence on the internal factors and the internal factors would affect differently on labour productivity improvement (Hu and Cai,

2004; Tangen, 2005; Freeman, 2008; Phan et al., 2019; Zhang et al., 2020). Da Nang City would consider the *available of labour force* as an important driver for enhancing hotel labour productivity. The involvement of labour force availability in both quantity and quality would be critical determinant for raising hotel quality via better labour productivity. Following human resource, *local government regulations and policies* and competition have considerable impacts. In contrast, *geographical and natural conditions* and *socio-economic* conditions provides little influence on *labour productivity improvement*. Beside, internal factors should directly impact on the *labour productivity improvement*. *Technology application* (0.27) and *capital allocation* (0.32) have the strongest impact. For *technology application*, this finding is in-line with David et al. (1996), Hu and Cai (2004) and Melian-González and Bulchand-Gidumal (2016). Specifically, hotels can be better equipped with innovative devices or installed several supervising software in order to increase labour productivity. Moreover, *capital allocation* regarding to finance or budgeting would be important in enhancing labour productivity in hotels (Mao and Yang, 2016; Malikane and Chitambara, 2017; Goel et al., 2017; Nguyen and Nguyen, 2019; Asada, 2020). Hotel sectors may require high initial investment for fix assets and equipment, therefore the decision of managers would be impacted significantly by financial budget. Inversely, the research finds out that several external factors, namely *geographical and natural conditions*, *socio-economic conditions* and *physical infrastructure* have mere influence on labour productivity improvement. These external factors may be fully exploited and there is no more added value. Goel et al. (2017) specifies that macro-economic factors can be vital at the beginning but in the long run, labour productivity should focus on more human related or organisational factors. Besides, the direct effects of *management* (0.01), *labour quality* (0.03) and *leadership style* (0.04) are surprisingly low which is contrary to other findings from Brown and Dev (1999), Freeman (2008), Sharma and Sehgal (2010), Tran et al. (2018) and Poldrugovac et al. (2016). This would be explained as traditional ways of enhancing labour productivity via organisational practices is becoming outdated. Therefore, hotels managers should change to innovative procedures, namely: *technology application* and *capital allocation* instead of traditional ones as of *management*, *leadership style* and *labour quality*.

- Thirdly, it is surprising to conclude that in external factors, *physical infrastructure* provides an inverse effect on the labour productivity improvement. This may pose a problem of infrastructure establishment usage in Da Nang. Moreover, *geographical and natural conditions* and *socio-economic conditions* have hardly any impacts on *labour productivity improvement*. Although Da Nang has striking strengths for tourism activities in both geographical and social issues, the hotel service would take no advantage of those for developing labour productivity. In terms of internal factors, *labour quality and management* bring about slight impact on labour productivity despite the relevance of human factor. *Technology application* and *capital allocation* (innovation and budget) should cover the lack of quality.

Analytical results suggest some implications for policy-makers and for hotel managers about labour productivity issues in Vietnam. Regarding policy-makers, external determinants must be thoroughly considered. Consequently, *local government regulations* and policies is the second-largest and *competition* is the third-largest determinants on *labour productivity improvement* (Goel et al., 2017). Therefore, the

authority of Da Nang should create highly competitive environment for hotels and maintain the regulating role in this condition. Moreover, the zero influence of *geographical and natural conditions*, *socio-economic conditions* poses a problem of wasting resources for *labour productivity improvement* in particular and for economic development in general for Da Nang City. Regarding hotel managers, although hotel is a service with the characteristics of labour-intensive (Hanc, 2019; Nguyen and Pham, 2021), labour quality is slightly important for productivity improvement. In addition, labour productivity significantly depends on *technology application* and *capital allocation* for better development (ILO, 2020). The hotel managers must provide roadmap for technology to be advanced constant and enhance the budget plan in order to assure the performance. Generally, there are empirical evidences indicating that labour productivity is connected with conventional labour productivity indicators, especially in business environment beside the inner enterprise influencing factors (Nguyen et al., 2020). The findings support the idea that Vietnam's Government strategy of fostering a favourable business climate is critical for encouraging economic growth, particularly in terms of broadening the economic base and on the in-depth impacts of institutional changes on worker productivity in service sectors would be productive.

The study has encountered several limitations. In terms of research methodology, this study collects information via self-reported questionnaire survey and this could result in individual bias. Despite author's efforts, the perceptual data generates research inaccuracy. Besides, the external factors can be challenging to be assessed, especially on the two variables *geographical and natural conditions* and *socio-economic conditions*. These factors are more related to the macro-economic context and may be underrated by enterprises or hotels. However, the two variables should be mentioned because of the importance in forming the business environment in Da Nang City. Moreover, the study was conducted before and during the COVID-19 pandemic which resulted in several differences in data collection.

7 Conclusions

This study analyses the database from different hotels in Da Nang, Vietnam and indicates the results on labour productivity improvement. It can be inferred that external factors have indirect effects and the internal factor have direct effects on labour productivity improvement in hotel service. Therefore, the operating hotels should pay attention to the impacts from the outsiders (government, local labours, socio-economic conditions, …) besides implementing effective management practices inside the organisations in order to obtain better performance or more particularly, higher labour productivity. It can be deeply concentrated that labour productivity improvement in hotel service in emerging economies should be achieved by enhancing business environment together focusing on different internal perspectives such as technology application and capital allocation.

The major findings of this study would pave the way for the further development of hotels in specific and the whole service sector in Vietnam and other developing countries. Future researches can use the analytical framework of the labour productivity improvement proposed by this study to investigate different aspects of internal and external factors across the countries. For instance, technology aspects applied in the hotels service can be decomposed into such dimensions as customer supporting

technology, managerial support technology along with different innovation perspectives related with product, process, organisational and market issues. The future studies should explore both objective and subjective measurements on productivity and extend the sample size so that more complex statistical methods can be applied to investigate not only the direct and indirect effects but also to capture the mediation and moderation effects of such aspects as organisation structure or national and organisational culture perspectives.

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Appendix

Questionnaire items

a Geographical and natural conditions:
- Geographic location of Da Nang City is suitable for hotels to develop the market.
- Geographic location of Da Nang City is satisfactory for hotels to access regional supply chain.
- Seasonal conditions are acceptable for hotel business.
- Natural resources can be adoptable for hotel business.

b Socio-economic conditions:
- Local economy is steadily developing.
- Local labour force is commonly known with hard-working diligence.
- Local labour force is disciplinary in working procedures.
- Local labour force possesses progressive spirit at work.

c Physical infrastructure:
- Transportation infrastructure in Da Nang meets the requirements of hotel business.
- Water supply infrastructure in Da Nang meets the requirements of hotel business.
- Water drainage infrastructure in Da Nang meets the requirements of hotel business.
- Power infrastructure in Da Nang meets the requirements of hotel business.
- Telecommunication infrastructure in Da Nang meets the requirements of hotel business.

- Information technology infrastructure in Da Nang meets the requirements of hotel business.
- Public infrastructure in Da Nang meets the requirements of hotel business.

d Availability of labour force:

- Local workforce supply (in hotel business) is sufficient.
- Local labours are fully qualified with the hotel requirements.
- Hotels have no difficulties in recruiting trained labours.
- Hotels have no difficulties in exploiting trained labours.
- Competitive level of local labours and external-sourced labours is increasingly higher.

e Competition:

- Tourists to Da Nang have diversified tastes and requirements for services provided by hotels.
- Hotels guests emphasised on high quality for service provided.
- Regional hotels have close-knit collaboration in order for mutual supportive policies.
- Hotels are maintaining fair competition in the market.
- Hotels in the same industry have remarkable level of competition.

f Resource allocation:

- The in-efficient hotels can be eliminated from the market.
- Efficient hotels in Da Nang have no difficulties in recruiting desired labours.
- Efficient hotels in Da Nang have no difficulties in getting access to bank credits.
- Efficient hotels in Da Nang have no difficulties in getting access to developing funds.
- Efficient hotels in Da Nang have been producing high growth rates.

g Local government regulations and policies:

- State management provided better opportunities for hotels to operate.
- Public management enhances the hotel business in Da Nang.
- Public administrative formalities produce no hindrance for hotel business.
- Da Nang local authorities allocate the resources for development fairly among the hotels.
- Da Nang local authorities implement supporting policies for organisational innovations.
- Da Nang local authorities implement policies for market expansion domestically and internationally.

h Labour quality:

- Employees have knowledge required by the hotels for better operations.
- Employees have working skills satisfied the hotel manager’s requirements.

- Employees have acceptable disciplinary spirit for hotel operations.
- Employees are creative in completing tasks with innovative spirit.
- Employees possess high appreciation for productivity enhancement.
- Employees' physical health is fully adaptable to the requirements of hotel managers.
- Employees can be flexible in changing conditions of hotel works.
- Labour quality (knowledge, skills, discipline and progressive spirit) are enhanced annually.

i Leadership styles:

- Hotel leaders appreciate and encourage the employees to follow innovations and creativity.
- Hotel leaders have strong commitment to labour productivity improvement.
- Hotel leaders are directly involved in the activities of labour productivity improvement.
- Hotel leaders have supporting role in producing quality culture.

j Management:

- Hotel activities have been carefully planned with specific objectives and resource allocation.
- Hotel activities are supervised with process management highlighting the quality importance.
- Hotel-managing documents are presented with clear consideration and systematically applied.
- Hotels constantly follow, investigate and supervise operations for assuring working quality.
- Management system of the hotels are established on the foundation of ISO 9000.

k Technology application:

- Hotels are active in searching for new technology and techniques in business area.
- New technologies are widely implemented in Da Nang hotel business.
- Hotels has been investing considerable number of resources for research and development activities.
- Hotels have been investing considerable amount of finance for purchasing equipment and machines.
- Technology skills of hotel employees satisfy the requirements of the hotels.
- Hotels have special compensation for highly-skilled employees.
- Hotels appreciates enhancing the ability of exploiting and using technology among employees.

l Capital allocation:

- The finance budget composition of the hotels is reasonably divided.

- Hotels have little difficulties in accessing the bank credits for operations.
- Hotels have little difficulties in accessing non-bank credits for operations.
- Capital efficiency are enhanced on yearly basis by the hotels.

m Labour productivity improvement:

- Labour productivity increases annually.
- The ratio of average revenue to number of labour increases annually.
- The ratio of average profit to number of labour increases annually.
- Hotel market share is in upward trend.
- Hotel competitive advantage becomes stronger annually.
- The percentage of capital wastage decreases annually.
- Resource efficiency increases dramatically.