
Supplementary information

A comprehensive analysis of factors influencing the selection of indoor air quality improvement solutions for healthcare projects in Vietnam

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Table S1. Influencing variables.

Influencing variables	Key references	
	Drivers and barriers in GB/ IEQ technology adoption	Strategy for indoor air quality in hospitals
Higher initial cost, long pay-back	Wang (2018) ^[1] , Ahn (2013) ^[2] , Nguyen (2017) ^[3] , Afful (2022) ^[4] , Yang (2015) ^[5] , Mittal (2020) ^[6]	Hama (2023) ^[7]
Extra cost for technologies, certifications	Nguyen (2017) ^[3] , Afful (2022) ^[4] , Wang (2021) ^[8]	Hama (2023) ^[7] , Macnaughton (2015) ^[9]
Cost benefits/ expenses during operation	Nguyen (2017) ^[3] , Ahn (2013) ^[10] , Pandey (2017) ^[11]	Hama (2023) ^[7]
Market demand, Client's interest	Wang (2018) ^[1] , Nguyen (2017) ^[3] , Afful (2022) ^[4] , Mittal (2020) ^[6] , Ahn (2013) ^[10]	Hama (2023) ^[7]
Branding and competitive advantages	Nguyen (2017) ^[3] , Yang (2015) ^[5]	
Government incentives; incomplete/ confusing legal framework	Wang (2018) ^[1] , Nguyen (2017) ^[3] , Afful (2022) ^[4] , Yang (2015) ^[5] , Du Plessis (2007) ^[12]	Hama (2023) ^[7]
Public awareness	Wang (2018) ^[1] , Ahn (2013) ^[2] , Nguyen (2017) ^[3] , Yang (2015) ^[5]	Rodrigo (2018) ^[13]
Inadequate/ available material; Lack of testing institute, measurement system, tool supplier	Wang (2018) ^[1] , Nguyen (2017) ^[3] , Afful (2022) ^[4] , Yang (2015) ^[5] , Wang (2021) ^[8]	Hama (2023) ^[7] ,
Database and information requirements	Afful (2022) ^[4] , Du Plessis (2007) ^[12]	Hama (2023) ^[7] , ASHRAE (2021) ^[14] , Rodrigo (2018) ^[15] , Brittain <i>et al.</i> (2020) ^[16]
Site planning, outdoor pollution data	WHO (2021) ^[17] , Kim <i>et al</i> (2016) ^[18]	ASHRAE (2021) ^[14] , Rodrigo (2018) ^[15] , Ibrahim(2022) ^[19] , Gola (2019) ^[20] , Settimo (2017) ^[21]
Project planning, early-stage assessment design	Afful (2022) ^[4] , Northridge (2013) ^[22] , Hua <i>et al.</i> (2019) ^[23]	, Brittain <i>et al.</i> (2020) ^[16] , Settimo (2017) ^[21]
Conflict/ Compatible with design components (dimensional aspects, finishing and material)	Wang (2018) ^[1] , Kim <i>et al.</i> (2016) ^[18]	ASHRAE (2021) ^[14] , Brittain <i>et al.</i> (2020) ^[16] , Ibrahim(2022) ^[19] , Gola (2019) ^[20]
Collaborative integration between	Nguyen (2017) ^[3] , Afful (2022) ^[4] ,	Hama (2023) ^[7] , ASHRAE

Influencing variables	Key references	
	Drivers and barriers in GB/ IEQ technology adoption	Strategy for indoor air quality in hospitals
agencies/stakeholders;	Yang (2015) ^[5] , Mittal (2020) ^[6] ,	(2021) ^[14]
Communication and partnership	Pandey (2017) ^[11] , Du Plessis (2007) ^[12]	
Incremental risk and uncertainties in processes	Nguyen (2017) ^[3] , Wang (2021) ^[8]	
Technical understanding/ capacity and skills in designs, building, project team	Nguyen (2017) ^[3] , Afful (2022) ^[4] , Yang (2015) ^[5] , Mittal (2020) ^[6] , Wang (2021) ^[8] , Pandey (2017) ^[11] , Du Plessis (2007) ^[12]	Hama (2023) ^[7] , Rodrigo (2018) ^[24]
Education and training	Nguyen (2017) ^[3] , Afful (2022) ^[4] , Yang (2015) ^[5] , Du Plessis (2007) ^[12] ,	Rodrigo (2018) ^[15] , Ibrahim(2022) ^[19] , Gola (2019) ^[20] ,
Local construction industry condition	Nguyen (2017) ^[3] Kim <i>et al</i> (2016) ^[18]	Ratajczak (2022) ^[25]
Control method for Indoor pollutants (ventilation system, disinfectant activities, etc.)		ASHRAE (2021) ^[14] , Rodrigo (2018) ^[15] , Brittain <i>et al.</i> (2020) ^[16] , Ibrahim(2022) ^[19] , Gola (2019) ^[20] , Shen (2023) ^[26] , Hama (2023) ^[7] , Macnaughton (2015) ^[9] , Rodrigo (2018) ^[15] , Settimo (2017) ^[21] , Gola (2019) ^[20] , Shen (2023) ^[26] , Ratajczak (2022) ^[27]
Effects of ventilation system on effectiveness, energy efficiency, and health, e.g.	Aaltonen (2013) ^[28]	TCVN 13521:2022; Rodrigo (2018) ^[15] , Hai (2018) ^[30] , ASHRAE (2021) ^[14] ,
Technology adoption process and future legislation adaptability	Yang (2015) ^[5] , Du Plessis (2007) ^[12] , Sepasgoza (2016) ^[29] ,	Rodrigo (2018) ^[15] , Hai (2018) ^[30] , ASHRAE (2021) ^[14] ,
Building maintenance, operational strategy	Pandey (2017) ^[11] , Aaltonen (2013) ^[18]	Rodrigo (2018) ^[15] , Ibrahim(2022) ^[19] , Gola (2019) ^[20] , Shen (2023) ^[26]
Medical activities, medical equipment, and room function		Rodrigo (2018) ^[15] , Ibrahim(2022) ^[19] , Gola (2019) ^[20] , Shen (2023) ^[26] ,

GB: green building; IEQ: indoor environmental quality.

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