

Vindicate BLS and BLD Of FGD Mix-Data Census through Triangulation Convergence

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Abstract: *Focus Group Discussion (FGD) is frequently being used as a qualitative approach to gain an in-depth understanding of social issues. It also strongly influences on the quantitative method of a research as the next phase of the activity. Consequently, using that both-method statistical data finding through the triangulation conclusion method is the most appropriate way to achieve the credible data result. Hence, this paper tabulates and expose the triangulation convergence cross finding census in order to come-up with the strong theory and hypothesis prediction on the Building Leakage Syndrome (BLS) or Building Leakage Defects (BLD) problem. The report uses Excell and SPSS v27 to enhance the technical computer tabulation and records.*

Keywords: Building leakage, Focus Group Discussion, triangulation method, convergence

1. Introduction

Focus Group Discussion (FGD) is one of the most effective and popular market research methods available used to gather qualitative data and in-depth insights data (Berg, 2011). The formulation of this data census initial findings can be formulated to further contained the quantitative method measurement process (Machado-da-Silva, 2003). Next, data triangulation study uses multiple sources of data or multiple approaches to analyzing data (Hammerton & Munafò, 2021) (Boton & Forgues, 2017) to enhance the credibility of a research study accurately been implemented (Bergman, 2014). Mixed methods research always uses triangulation approach to lead into superior research result (Younas et al., 2023) (Heesen et al., 2019) (John W. Creswell; Vicki L. Plano Clark, 2017).

The paper focusing on the FGD discussing on the reasons and effects of leaks in building. In the construction industry, BLD (Building Leakage Defects) or simply the leaks might refer to penetrating damp, allowing moisture through roofs, walls, floors, windows and so on (Talib et al., 2015). This can cause decay to the building fabric, mold growth, mildew and so on (Kubal, 2008). The mix-method census on the BLD data will technically been compared and analysed using manual Excell input as well as using SPSS v.27. Hence, the result strongly influences and prove on the hypotheses of the paper's thesis.

2. Triangulation on FGD

2.1 FGD outcome – Building component’s defects identification (Part 1) + Google Forms - (Table 1)

For this statistical triangulation measurement, six independent variables have been identified from the F.G.D. activities report (part 1) (see Table 1). Five interpretation outputs have been cast, ranging from the identified problem matters to the building types. The six variables identified to consist of RWDP complicated matter, enclosed space defects, snags to water supply piping leakage defect glitches. From the discussion series, two responses from W.S.C. indicated having 28 problem cases (the highest) with the internal space where leakage occurred above the C.F.R., and the 2nd in the list with 21 problem cases on the leakage originated from the external wall. For the record, a total of 109 problem cases accumulated, with all the cases coming from G.O.M. or G.L.C. owned buildings.

With also six dependent variables ranging from the same elements of the F.G.D., 6 identified questionnaires which are SB2/Q19a, SB2/Q28g, SB1/Q11c (on external wall), SB1/Q11c (on the internal wall), SC2/Q51 and SC2/Q56n reported 53 respondents with 'Strongly Agree' mark which is the strongest and 39 respondents with 'Strongly Agree' ranked 2nd in the list. It is clear from the result, 83.3% marked 'YES' on the triangulation convergence analysis with only one marked with 'NEUTRAL' on thermal dampness problem with 12 cases and 59 'Neutral' online respondents of (n=86) survey.

This test indicates that even from the F.G.D. part, compared to the selected relevant online questionnaire with (n=86) respondents, all are from the active industry players; the triangulation converged into a firm indication that building defects are happening rapidly, and it is regrettable to say that building defects can now become a public failure case. It is hoped that these triangulation studies can become a stepping stone for the parties to build more awareness and assigned us a more cognizance state of the defect problems. Some players may take it for granted that we had been at the stage where we currently are – at a comfort level, and that is not the case.

Table 1: Triangulation Convergence Table on Building’ components defect factor -Qualitative from Malaysia real projects versus Quantitative from Online L.S. survey (set 1)

Building part	Rain Water Down Pipe (RWDP)	Enclosed room/ space	External wall	Internal wall	Important room located right above flat roof	Water supply piping
Problem	Size cannot accommodate amount of water	Dampness/ moisture inside the room	External wall cracked	Internal wall cracked	Possibilities having roof leaking high	Piping leakage
Generate building defects	Water seepage toward inside the building	Water appearance on window glass	Water seepage toward inside the building	Allowed water seepage from outside the building	Defects related to ceiling and impact valuables inside	Water seepage toward inside the building
Defects no/s	17	12	21	19	28	12
Building type/s	Office, Mosque, Factory, Golf club, Shopping Centre	Office, Residential, University Hostel, Hospital	Hospital, Multi-purpose Hall, Mosque	Office, Residential, Museum	Office, University's Hostel, Hotel,	Office, Factory, Condominium, Airport building

Owner	Government/ GLC, Private	Government, Private	Government	Government	Government, Private	Government/ GLC
TRIANGULATION CONVERGED	YES	NEUTRAL	YES	YES	YES	YES
Question's Depiction	Undersize RWDP unable to cope with rainwater amount seems contribute more to building defects (leakage) problem.	Thermal moisture is where most of the source of the leaking defect	Most common defects - wall and floor crack.	Most common defects - wall and floor crack.	Important space must NOT be located right below the roof.	Water piping is where most defected interior space happened.
Question's Section and no	Section B2 - Question 19a	Section B2 - Question 28g	Section B1- Question 11c	Section B1- Question 11c	Section C2- Question 51	Section C2- Question 56n
Likert Score	Agree- 41 Strongly Agree -39	Disagree- 12 Neutral-59 Agree- 15 Strongly Agree -22	Neutral- 24 Agree -46	Neutral- 24 Agree -46	Agree- 28 Strongly Agree - 53	Slightly Agree- 18.6% Agree - 59%

2.2 FGD outcome - Building component's defects identification (Part 2) + Google Forms - (Table 2)

This is the continuation (Part 2) of the previous table, and for this triangulation statistical measurement, five independent variables have been identified from the F.G.D. activities report (see Table 2). Again, five interpretation outputs have been cast, ranging from the identified problem to the building types. The five variables identified to consist of air-conditioning leakage piping problematic matter, cracked concrete gutter technical hitches to peel-off exposed roof defect malfunctions. From the discussion series, two responses from W.S.C. indicated having 29 problem cases (the highest for this table) with the internal wet area leakage. The 2nd in the list with 18 problem cases about the leakage originated from the internal space floor material. For the record, 85 problem cases accumulated from this table, with total cases of 194 from both tables. All the cases coming from G.O.M. or G.L.C. owned buildings which are the focus of this study.

With five dependent variables ranging from the same elements of the F.G.D., 5 identified questionnaires which are SB2/Q28m, SB2/Q28i, SC2/Q56j, SB1/Q11c and SB5/Q45k, reported 32 respondents with a 'Strongly Agree' mark which is the strongest and 16 respondents with "Strongly Agree' ranked 2nd in the list. It is clear from the result, 100% marked 'YES' on the triangulation convergence analysis for this 2nd continuous table with the highest score proving the most problem on the exposed roof membrane matter.

This test indicates that even from the F.G.D. part, associating to the selected applicable online questionnaire with (n=86) respondents, all are from the active industry players, the triangulation converged into a very sturdy warning that building defects are happening hastily. It is unfortunate to say that building deficiencies become a civic fiasco case. The

construction players seem forgotten about the building defects issues and not taken it seriously as no lessons learned (as in a psychomotor mode side (Ma & Norwich, 2007) of it).

Table 2: Triangulation Convergence Table on Building' components defect factor -Qualitative from Malaysia real projects versus Quantitative from Online L.S. survey (set 2)

Air-cond. water waste piping	Concrete perimeter gutter	Internal wet areas	Floor material of internal space	Exposed roof membrane	Defect Total
Piping leakage	Gutter cracked	Water leakage from wet area	Floor material cracked/ peeled-off i.e. Linoleum, tiles etc.	Roof membrane deteriorated and peel-off	
Water seepage toward inside the building	Water seepage toward inside the building	Water seepage leaking toward underneath space	Originated from water or material deteriorated	Defected related to ceiling and impact valuables inside	
13	11	29	18	14	194
University's offices, Hotel	Commercial (Bank), Petrol station, Government quarters, Prison	Office, Residential, University Lecture Hall, Hospital	University hostel, Police station, Condominium, Hotel	Office, Hostel, private house, Air Force weapon storage	
Government, Private	Private, Government	Government, GLC	Government, Private	Government, Private	
YES	YES	YES	YES	YES	
Air-cond. piping is where most of the source of the leaking defect happened.	RWDP and gutter is where most of the source of the leaking defect happened.	Interior wet areas are where most defected interior space happened.	Most common defects - wall and floor crack.	Bituminous membrane waterproofing is the major defects rectification material used to bust BLS.	
Section B2- Question 28m	Section B2- Question 28i	Section C2- Question 56j	Section B1- Question 11c	Section B5- Question 45k	
Agree- 65 Strongly Agree -16	Agree- 68 Strongly Agree -12	Agree- 43% Strongly Agree -36%	Neutral- 24 Agree -46	Agree- 40 Strongly Agree -32	

QUANTITATIVE RESEARCH METHOD - LIKERT SCALE METHOD 86(N)
 QUALITATIVE RESEARCH METHOD - FOCUS GROUP DISCUSSION (FGD)

3. Conclusion

This paper has provided an amalgamation of the research exploration over the triangulation study on both methods used to study FGD census database. Vital findings of the research have been discussed in detail, coupled with significant results concerning FGD research findings on defects in new and previously built buildings in Malaysia. The triangulation findings show that defects quality enhancement identified defects sources and awareness of building quality standards are fundamental in achieving efficiency improvement within Malaysia's construction industry. Improvement opportunities around the performance in the construction industry potentially and can be suggested to be identified and elaborated by J.K.R. and CIDB (Talib et al., 2014) in which the among the main industry players. The convergence discussions within this paper conclude the census phase of the study and have one way, or another fulfilled the FGD variables which the study has attained.

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