Employee engagement as developing the capacity for next generation of green buildings

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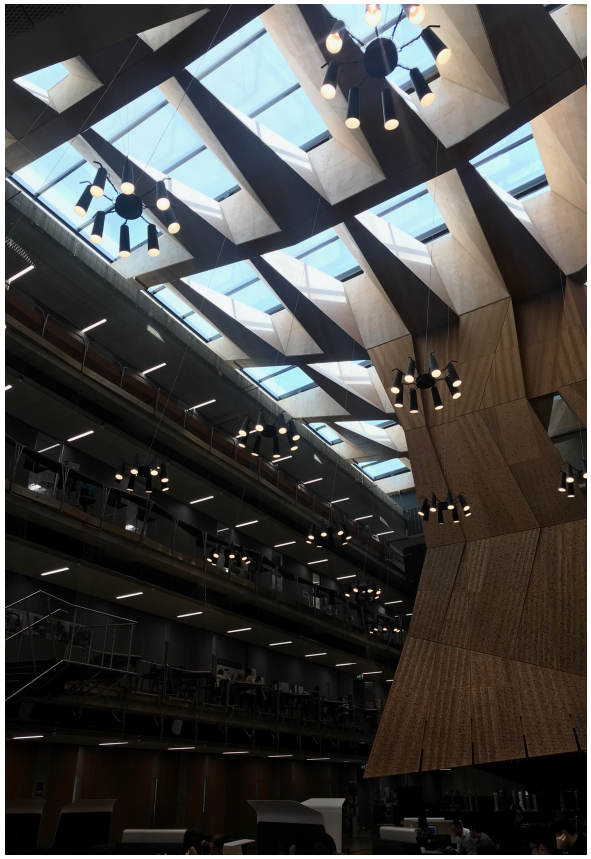
Background

Research



Engineering Expertise

Social Needs

- Universities have the potential to demonstrate sustainable practices through education, research, operation and governance
- International agreements, national policies and client-driven interests have all stimulated to development of green academic buildings globally
- However, the capacities of universities in addressing all aspects of sustainability holistically have still not been optimised completely
- The cognitive and social barriers are still unrecognised and not much practically explored

Research Aim

To explore the socio-behavioural barriers in a Green Star rated Victorian University to evaluate the respective challenges, and provide solutions to overcome them to achieve better campus sustainability outcomes

Methodology

1. Distribution of Surveys

The survey used that gathered information on the building performance and indoor environment quality

2. Semi-structured Interviews

Interviews with facility/asset managers and wider stakeholders (e.g. design professionals) involved in the project

3. Validate data

Discussions with the stakeholders carried out. Initial findings, learnings and key outcomes of the research were discussed

POE reporting and further analysis

Intermediate Step (stage completed)

The framework falls under the 'Mixed Method Approach' format

What is Post Occupancy Evaluation (POE)?

'POE is a widely recommended concept for evaluating building performance. Over the years POE has progressed from a one dimensional feedback process to a multidimensional process that acts as an integrated element that can help drive the building procurement process further' *(Hadjri and Crozier 2009, p.33)*

Benefits:

- Continuous improvement (Zimmerman and Martin 2011)
- Acts as a useful snapshot of user's views
- Assists in better understanding of the use and re-use of buildings (Whyte & Gann, 2001)
- Assists in improving the commissioning of buildings
- Improvement of facilities
- Closing the gap between building occupation and management
- Closing the gap between building occupation

Case Study Building

Features	Building A
Build	New Build (completed 2014)
Faculty	Faculty of Design and Manufacturing
Green Star Rating	5 Star Green Star (Design v1)
Building Volume	22,000m^3
Gross Floor Area (gfa)	11,640m^2
Number of levels	10

Stages and timeline of data collection

Initial Discussions with the users and managers	POE	Stakeholder Interviews
Jan-Jul 2015	Aug/Sep 2015	Early to Mid 2016

Findings

- The survey results demonstrate a mixed response for users in relation to the building performance indicators

- The surveys revealed that the building performed exceptionally well in three categories for the staff: lighting; aesthetic appeal; and teaching and learning spaces

- Concurrently, the building performed poorly for the staff in three factors: noise; personal control over physical environment such as HVAC and flexibility of office spaces; and stakeholder consultations

- As per the students with respect to student specific spaces, the students responded *Satisfactory or better than Satisfactory* in more than 90% of responses except for the 'amount of space' which was rated as *Satisfactory or better than Satisfactory* by 89% of respondents

Findings: Management Perspective

- **Things that worked well according to the building and asset managers were:**
  i. Institution image
  ii. Increased attendance
  iii. Showcasing best practice model within their campuses
- **Few general key lessons learned were:**
  i. Realising the significance of building commissioning
  ii. Insufficient stakeholder management
  iii. Need for formulating building guides to support the building in operation
  iv. Incorporating evaluation, monitoring and verification techniques in the management structure

- The transcribed interview data was compared to initial Green Star Education Design v1 criteria aspirations as determined in the respective GBCA applications of the respective building
- The key factor observed were lack of appropriate management frameworks in the University's guidelines

Summary

- The results demonstrate that the overall development of the case study building shows promising outcomes with respect to improved indoor quality; building services and teaching; and learning spaces, placing the building at 52% middle-top percentile compared to the equivalent Australian building benchmark data
- The buildings have also performed well from an energy conservation point of view
- However, the building performed poorly in terms of occupant satisfaction and there are lessons which can be drawn upon for future developments to improve outcomes further
- There are learnings to be considered for facility and asset managers as an opportunity to integrate a number of outcomes into the revision of their design guidelines and modify future projects accordingly
- The results hence demonstrate the case study building has failed to achieve its green building outcomes in relation to the social sustainability

Conclusion

- To achieve sustainability, a building needs to be socially, environmentally and economically sustainable
- Further research is recommended on practical demonstration of incorporating appropriate monitoring and verification techniques to achieve desired building performance outcomes that adhere to green building practices
- The overall governance structures directing building operation hence needs to be modified and re-structured with changing needs and standards
- Thus, it becomes highly significant to incorporate timely monitored performance management tools within an organization's management structure
- Also, to integrate stakeholder engagement and management at each phase of any project to optimise the potential for all the stakeholders and creating an output beneficial and satisfactory for all

References

- Hadjri, K. & Crozier, C. (2008), Post-occupancy evaluation: purpose, benefits and barriers, *Queen's University Belfast, Belfast, UK*
- Whyte, J. & Gann, D.M. (2001), Closing the loop between design and use: post occupancy evaluation, *Building Research and Information, 29 (6), pp. 460-462*
- Zimmerman, A. & Martin, M. (2001), Post-occupancy evaluation: benefits and barriers, *Building Research and Information, 29 (2), pp. 168-174*

THANK YOU