Placing defects at the heart of high quality new homes: a learning perspective

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Executive Summary

The UK new build housing sector is facing dual pressures to expand supply, whilst delivering against tougher planning and Building Regulation requirements; predominantly in the areas of sustainability. The sector is responding by scaling up production and incorporating new technical solutions into new homes. This up-scaling and technical innovation has been of research interest; but this research has primarily focus on the ‘upstream’ implications for house builders’. There has been little attention, to the potential ‘downstream’ implications of ramping up supply and introducing new technologies for build quality and defects. This paper contributes to our understanding of the ‘downstream’ implications through a synthesis of the current UK defect literature regarding new-build housing. It is found that the prevailing emphasis in the literature is limited to the responsibility, pathology and statistical analysis of defects. The literature does not extend to how house builders individually and collectively, in practice, collect and learn from defects information. The paper concludes by describing an ongoing collaborative research programme to: (a) understand house builders’ localised defects analysis procedures, and their current knowledge feedback loops to inform risk management strategies; and, (b) building on this, develop new data capture and learning systems to reduce prevalent defects.

Keywords: defects, house builders, new homes, quality management, risk management

1 Introduction

In the United Kingdom (UK) there is a shortfall in the number of homes, amid claims that an additional 240,000 homes a year is required to meet demand, requiring an output increase of over 70% when compared to 2012 levels. In response to the shortfall the UK Government introduced a number of new-build focussed incentives to increase housing supply. In addition to increasing supply, the government has targeted new houses to be ‘zero-carbon standard’ from 2016. The house-building sector has reacted to the pressures by ramping-up supply (23% increase in housing starts for 2013 when compared to 2012), and incorporating new technical solutions in to new houses, to lower carbon emissions, and meet regulatory requirements. However, whilst responding to these pressures, the sector is reporting materials, skills and workforce shortages after the 2008 economic downturn, causing fears over future housing quality (HBS, 2013).

This paper presents an insight in to the challenges facing the new-build housing sector, establishing the challenge to deliver an increase in the production of new houses, development of tougher regulatory requirements, and methods house-builder are utilising to fulfil these. The paper then evaluates the literature surrounding the new-build housing sector’s challenges; which brings the area of defects to prominence. This is followed by a synthesis of the current UK new-build housing defect literature, discovering gaps within the literature, culminating in a proposal to address those gaps.

2 Literature review

In the UK house-building industry the up-scaling of production, with the incorporation of new technical solutions has been of research interest. Primarily, research has been related to ‘upstream’ pressures (influence from policy makers) based around two themes: (a) the available technical solutions to enable house-builders’ to comply with regulation (e.g. Sodagar et al., 2011); and, (b) the ensuing implications this has for house-builders’ business models and standardised design templates (e.g. Lees & Sexton, 2013). Conversely, research of ‘downstream’ aspects (the product passed on to
the customer) is less prominent, notable exceptions have been Yao & Yu, (2012) overheating in new homes, and Gill et al., (2010) energy performance in low energy homes, principally concentrating on ‘zero carbon standard’ influenced elements of the end product. Although, whilst researching the energy performance in new homes Gill et al., (2010), noted various defects in low energy homes; leaks to rainwater harvesting systems, and failure of biomass heating systems. The defects uncovered by Gill et al., (2010) indicate that the inclusion of new technology has the ability to impact new-home quality, an area of little consideration and research interest, in general. So, when the indications of new technology influenced defects are combined with the industry reported skills shortages, and an expansion in housing supply, is there significant potential for reduced build quality, and an increase in defects? A question the extant literature is silent on. UK new-build housing defect scholarship is generally scarce, with existing research primarily directed at ‘one off’ construction projects, and that targeting house-building being largely non-UK based (Sommerville, 2007). Within this literature the spotlight is on both construction (e.g. Atkinson, 2002), and post completion defects (e.g. Sommerville et al., 2004). This is by means of research at both stages in to the responsibility, type, and customer aspects of defects. The current research focus results in the authors establishing the size, type and cause of problems with no measures of reducing their prevalence. Conversely, the literature is silent on the potential for housing developers to analyse post completion defects, learn from them, and feed the knowledge back, to improve the repeat process and reduce future occurrences. The publications largely convey house builders being uniform, reporting “industry-wide” snapshots of defects at the given publications’ points in time. Furthermore, those differentiating between builders (e.g. Sommerville & McCosh, 2006) use restricted data of defects occurring within the first two years of a property’s life, with no indication that the findings are reported to the builder. Aside from Davey et al. (2006), who utilised focus groups as a way of multiple firms to work together to resolve individual problems, there is a shortage of literature studying defects at an individual organizational level. Especially studies utilising large scale data relating to defects occurring later within the properties life.

3 Future Work

As part of an ongoing research programme, this project proposes to address the highlighted gaps in literature by understanding top house-builders’ individual, and collective defect data collection and analysis procedures. Gain awareness as to how this defect analysis is used to inform subsequent risk and quality management procedures. Finally, building upon this, the project proposes to design and test action research interventions to develop new data capture, learning processes and systems to reduce targeted defects.

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References


