

Construction waste generation due to design phase

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influence. Environment and energy saving beliefs failed to predict residents' attitude toward using the heat pump system. Only beliefs related to space heating and having hot water are good predictors for attitude. Results showed also that only 'capacity for hot water', 'capacity for space heating' and 'maintenance' significantly contributed to the perceived behavioural control. These system characteristics can support or impede operating the heat pump system automatically. Residents prefer to an automatic heat pump system but they prefer to have control over their thermal environment. Knowledge about the heat pump system seemed to have no influence on residents' behaviour. The size of household has negatively correlation with attitude, perceived behavioural control, and intention. The bigger the household is, the more residents believe the heat pump system will not supply enough hot water and they behave accordingly. The heat pump system was positively evaluated by older residents which indicate the heat pump system fits living conditions for elderly people. This research suggested that the used approach can be applied for behavioural studies to use of new technologies for elderly people.

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L. ABARCA GUERRERO, G.J. MAAS, A.J.D. LAMBERT. **Construction waste generation due to the design phase.** *Gerontechnology* 2012;11(2):137-138; doi:10.4017/gt.2012.11.02.173.00 **Purpose** Construction waste is increasing worldwide. Few attempts have been made to address the effect of design practices on waste generation and most of them stem from high income economies. In this study the goal was to assess the contractors' perspectives, in a developing country setting, on the origins of waste due to the design phase. **Method** Information was collected per answer to 8 Likert-scale questions posed to 492 contractors. The respondents were asked to rate predetermined attributes according to their potential contribution to waste generation on site, based on their firm's experience^{1,2}. Eighty-six questionnaires were completed in full. Descriptive and inferential statistical techniques were used to analyze the attributes for the significance of their contribution. The t-test hypothesis about means was used to draw conclusions on population parameters based on statistics observed in the sample³. **Results & Discussion** The analysis of the data shows that the respondents acknowledged eight attributes as having an impact on construction waste generation sources on site due to the design phase (*Table 1*). The t-student values allowed determining with 95% confidence levels that they were significant. The attributes are: building low quality products or materials selected by designers, design changes by the clients while the construction is in progress, designers not paying attention to dimensional coordination of products while designing, lack of information in the drawings, lack of knowledge about market standards, products in the market with incompatible sizes (cm, inches, varas), and designers unfamiliarity with alternative products and complexity of drawings that are difficult to read. These results compatible with the findings of Ekanayake and Ofori³ and Osmani et al.² except for one that has not been reported in literature: 'Incompatible market standard sizes'. Some construction material suppliers are companies from USA that use the Imperial System units and a Spanish colonial heritage unit called 'vara' (84 cm) that is still used; these are not compatible with the SI-measures used in Costa Rica for example. Therefore extra waste is generated to fit all the pieces together. In conclusion, the methodology employed to analyse the causes of waste generation during the design phase could also be employed in studies related to aging-in-place

design issues. This study extends the knowledge about waste generation causes in a developing country.

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Table 1. Causes of construction waste generation during design phases (respondents views)

Attribute	Sample	% positive answers
Low quality products selected	86	86
Design changes due to clients	86	84
No dimensional coordination of products	87	91
Lack of information in drawings	86	80
Lack of knowledge about market standard	87	85
Incompatible market standard sizes	87	74
Designers unfamiliar with alternative products	87	83
Complexity of drawings	86	86

Keywords: construction waste, construction industry, design, influencing factors

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M. BRINK, J.E.M.H. VAN BRONSWIJK. Contribution of smart-home platforms to user acceptance.

Gerontechnology 2012;11(2):138-139; doi:10.4017/gt.2012.11.02.274.00 **Purpose** Although smart-homes and home automation systems have great potential to support aging-in-place, they have not yet been widely introduced to older adult's homes¹. One of the reasons is that the systems are not accepted by the end-users. Studies concerning user acceptance of smart-home technology exist², but the influence of smart-home platforms is not reported. These platforms integrate smart-home services and applications by sharing resources. It also supports the installation and adaptation of the system by offering support for plug-and-play applications in the user's home. The use of a dedicated smart-home platform would stimulate the widespread introduction of smart-homes, since it provides an open standard, speeds up the development of smart-home technology, and reduces costs³. The aim of this study is to discuss the theoretical contribution of smart-home platforms to user acceptance based on the Technology Acceptance Model (TAM) developed by the social sciences⁴. **Method** According to TAM, acceptance depends on how the user (i) perceives 'ease of use' and (ii) perceives 'usefulness' of the particular technology. To achieve widespread introduction of smart-home systems, new platforms are being developed, e.g. by the universAAL project⁵. We analyzed these platforms for the TAM-parameters perceived usefulness and perceived ease of use. **Results & Discussion** The platform's influence on perceived 'usefulness' of the smart-home system consists of the broad range of the applications it can support—e.g. both a simple community alarm and a fully equipped futuristic companion—and care robot. For these kinds of supports advanced (internet) protocols and complex forms of information exchanges (e.g. context awareness) are needed. The way a range of applications is supported by a smart-home platform has a direct influence on the usefulness of the whole smart-home system. Smart-home platforms influence perceived 'ease-of-use' in two different ways. First, the platform can simplify the installation and adaptation of connected technologies, for instance with automatic discovery of added services, auto-configuration leading to plug-and-play installation, and easy adaptation to changed user wishes or environmental conditions. Second, the platform can facilitate more complex technologies meant to support adaptive user-interfaces. This increases the ease of use of the smart-home system. Although technological smart-home platforms apparently play a key role in user's perceived usefulness and perceived ease of use, newly developing smart-home platforms, such as universAAL or Digital Home Compliance⁶, did not evaluate these aspects. We conclude that perceived usefulness and ease of use of TAM