

An Empirical Study on Influence of Quality on Adoption of Fly Ash Bricks

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Abstract: Construction sector utilizes various building materials including bricks. Fly ash bricks are safe, economical and have higher strength as compared to clay bricks. However adoption of fly ash bricks by consumers is not so encouraging. According to CEA report the use of fly ash in bricks manufacturing has large untapped potential which needs to be explored for increasing overall ash utilization in the country. Two factors influencing adoption of new product (innovation) are cost and benefit. As fly ash bricks are economical or at par with clay bricks in terms of cost, the cost factor is favorable to fly ash bricks. For bricks, possible benefit are strength, durability, cement saving, light weight, less water absorption, etc. All these relate to quality attributes. According to Rogers it's not the actual attributes but the perception about it which affects the adoption of an innovation. Accordingly the aim of the study is to find influence of perception about quality of fly ash bricks on its intended adoption. The preliminary findings indicate that, intention to adopt fly ash bricks is highly associated with perception of its quality.

Keywords: Perception of Quality, Intention to Adopt, Quality Management, Fly ash

1. Introduction

There has been a consistent rise in housing demands and consequently infrastructure sector in the recent past. The 12th five year plan (2012-17) indicates that construction sector has grown at a compounded annual growth rate (CAGR) of about 11.1% in last eight years, and accounts for about 9% of GDP [1]. Construction sector utilizes various building materials including bricks. Bricks are long lasting building material that can bear heavy loads and are versatile in nature. Bricks made up of clay are one of the oldest building material, they are being used from as early as 14000 BC [2], whereas Fly ash brick is comparatively a recent innovation in the field of construction. The main raw material used in manufacturing of fly ash bricks is fly ash; a mineral residue consisting of inorganic, incombustible material, primarily generated by coal fired power plants. Fly ash bricks are safe, economical and have higher strength as compared to clay bricks. As fly ash bricks utilize waste material (fly ash) and conserve other natural resources (soil and fuel) they are environment friendly and thus promoted by Government authorities. As follows, if consumers use fly ash bricks it will be helpful for the environment in addition to it being economical in cost and superior in quality. However adoption of fly ash bricks by consumers is not so encouraging. Nearly half of the fly ash produced is being utilised in the country out of which just 6.51% is being used for making of bricks. The use of fly ash in bricks manufacturing has large untapped potential and can be explored for increasing overall ash utilization in the country [3]. Two factors influencing adoption of new product (innovation) are cost and benefit. If additional cost is required to be paid for an innovation it is a barrier and may negatively affect to the adoption whereas the benefits associated would positively affect the adoption [4]. Fly ash bricks are economical [5] or at par with clay bricks in terms of cost, as follows the cost factor is favourable to fly ash bricks. Fly ash bricks have numerous benefits over clay bricks such as they have more compressive strength, lighter in weight which leads to less dead weight on the structure, durable, saves cement, absorb less water [6]. All of these relate to quality attribute of fly ash bricks. According to Rogers 'It's not the actual attributes but the perception about it which affects the adoption of an innovation' [7]. Thus while studying the quality from the perspective of adoption; the customers' perception about the quality (i.e. benefits) is more important than the quality itself.

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2. Research Objective and Hypothesis

The study attempts to find influence of perception about quality of fly ash bricks on its intended adoption. Accordingly the research hypothesis is formulated as below.

Hypothesis: Intention to adopt fly ash bricks is influenced by perception of its quality.

3. Research Methodology

To meet this objective a questionnaire was developed and primary data was collected from consumers of Chhattisgarh region. Total 78 correspondents were selected using snowball sampling technique and interviewed; The consumers were asked to respond to the statement ‘Fly ash bricks are compatible with my perception of good quality bricks’ and also to the statement, ‘If I construct in near future, I will most likely use fly ash bricks for main building’. The responses were recorded using a five-point Likert scale (strongly disagree, disagree, neutral, agree, and strongly agree).

4. Analysis

The study is ongoing and the findings presented here are based on the limited data and analysis done so far. The data was analysed using Pearson’s Correlation to find out the influence of quality perception on intention to adopt fly ash bricks. Results indicated there is a significant relationship between these two as the p-values are less than 0.05. Hence the hypothesis “Intention to adopt fly ash brick is influenced by perception of its quality.” is supported at 0.05 level of significance.

Table 1 Correlation between independent variables (perception about quality of fly ash bricks) and the dependent variables (intention to adopt fly ash bricks)

→ Correlations

		Quality	Intention_MB
Quality	Pearson Correlation	1	.742**
	Sig. (2-tailed)		.000
	N	78	78
Intention_MB	Pearson Correlation	.742**	1
	Sig. (2-tailed)	.000	
	N	78	78

** . Correlation is significant at the 0.01 level (2-tailed).

It was further analysed based on rules of thumb [8] about Correlation Coefficient Size (r), and concluded that intention to adopt fly ash bricks is highly associated with perception of its quality ($0.7 < r \leq 0.9$).

Table 2 Rules of Thumb about Correlation Coefficient Size [8]

Coefficient Range	Strength of Association
+/- (0.91 - 1.00)	Very strong
+/- (0.71 - 0.90)	High
+/- (0.41 - 0.70)	Moderate
+/- (0.21 - 0.40)	Small but definite relationship
+/- (0.00 - 0.20)	Slight, almost negligible

Note: Assumes correlation coefficient is statistically significant.

5. Conclusion

The relation between perception about quality and intention to adopt fly ash bricks was found to be significant and highly associated. As follows consumers having favourable perceptions about the quality of fly ash bricks are likely to have positive intention to adopt fly ash bricks. In view of this, the study recommends that agencies promoting fly ash based consumer products should consider the aspect of consumer’s perception about the quality while developing their promotion strategies and activities. This is likely to enhance the intention to adopt, leading to higher rate of adoption of fly ash based innovative products and utilization of fly ash.

6. References

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