

Consumer Purchasing Behaviour towards Iron and Steel Materials: A Study of Individual Users in Tiruchirappalli Corporation, Tamil Nadu

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Abstract

The iron and steel industry is closely connected with construction and infrastructure development, with individual users forming an important consumer segment. This study examines the purchasing behaviour, brand preferences and quality considerations of individual users of iron and steel materials in Tiruchirappalli Corporation, Tamil Nadu. Primary data were collected from 110 respondents through a structured questionnaire using simple random sampling. Frequency and percentage analysis were used to examine the demographic characteristics and purchasing practices of the respondents. The Chi-square Goodness-of-Fit Test was used to assess differences in brand preferences, while quality attributes were examined based on the level of consideration given by respondents. Residential use was the main purpose of purchasing iron and steel materials, reported by 95.5 per cent of respondents. Own information and advertisements were the most commonly used sources of information, reported by 96.4 per cent and 95.5 per cent of respondents, respectively, while 80.0 per cent relied on the internet. JINDAL was the most preferred company, followed by JSW, SAIL and VISA. The Chi-square test showed a statistically significant difference in brand preferences ($\chi^2 = 28.184$, $df = 9$, $p = 0.00089$). Among the quality attributes, strength received the highest level of consideration, followed by durability and corrosion resistance. The findings show that product performance, access to information and brand positioning are relevant to understanding purchasing behaviour in the iron and steel market.

Keywords: Purchasing Behaviour, Iron and Steel, Brand Preference, Quality Attributes, Tiruchirappalli Corporation

1. INTRODUCTION

The iron and steel industry holds an important place in the economic development of nations. It supports construction, manufacturing, transportation, infrastructure and industrial activities, making iron and steel essential to modern economic systems. Urbanisation, industrialisation and the expansion of infrastructure have increased the demand for iron and steel materials in both developed and developing countries. In India, the steel sector contributes substantially to economic activity by supplying materials for housing, commercial buildings, industrial establishments, bridges, roads and other infrastructure projects. The continued expansion of the construction sector has further increased the use of iron and steel products, making consumer purchasing behaviour an important area of consideration [1]. Iron and steel materials are widely used because of their strength, durability, flexibility and cost-effectiveness. They are essential in residential construction, commercial buildings, industrial structures and public infrastructure. Demand for these materials is shaped by several factors, including population growth, changes in income, government infrastructure programmes and the expansion of the real estate sector. As the market grows, manufacturers and marketers face stronger competition as well as changing consumer expectations. Understanding the factors that influence purchasing decisions has consequently become important for firms operating in the iron and steel market. Consumer purchasing behaviour involves the assessment of several product and market characteristics before a purchase is made. Consumers may consider attributes such as strength, durability, corrosion resistance, temperature resistance, flexibility, appearance and environmental sustainability when selecting an iron and steel product or brand [2][3]. Product quality is not the only consideration. Information sources, brand reputation, product availability, purchasing methods and previous buying experiences can also influence consumer decisions. These factors shape consumer preferences and influence demand for different brands and product categories [4][5].

In recent years, the iron and steel market has undergone considerable change as a result of technological developments, greater product standardization and increased consumer awareness of quality and performance. Manufacturers continue to introduce improved products with greater durability, better resistance to environmental conditions and stronger structural performance. At the same time, consumers have become more informed and selective when making purchasing decisions. Access to education enables individuals to obtain and use information for informed decision-making, while equal access to education remains important in reducing differences in knowledge and opportunities [8]. Information available through advertisements, digital platforms, dealers, contractors and personal networks has made it easier for consumers to compare alternatives and select products suited to their needs. Consumer responses may also depend on how information related to sustainability is presented, including through eco-labelling and other product-related cues [16]. Understanding the sources through which consumers obtain information is therefore relevant to the development of effective marketing and communication strategies [6][7]. Individual users form an important consumer segment in the iron and steel market. They mainly purchase these materials for residential construction, renovation and small-scale building activities. Unlike institutional buyers and large construction firms, individual users often depend on personal judgement, advice from contractors and information available in the market when making purchasing decisions. Their preferences can differ from those of organisational buyers because personal perceptions, budget constraints and expectations regarding product performance influence their choices. Price sensitivity may also affect purchase intentions, particularly when consumers consider products involving relatively high expenditure [17].

Socio-economic conditions, especially income and educational attainment, can influence access to information, purchasing decisions and the ability to assess different products. Constraints associated with poverty may also limit educational opportunities and, in turn, affect consumer decision-making [9]. Examining the purchasing behaviour of individual users can therefore help to understand market trends and consumer expectations. Brand selection is another important aspect of consumer behaviour in the iron and steel market. The market includes several brands that compete on quality, reliability, availability and price. Brand preference reflects the degree of trust and confidence that consumers associate with a particular manufacturer. A strong brand image can influence purchasing decisions by reducing perceived risk and increasing consumer satisfaction [10]. Examining brand preferences among individual users can help manufacturers assess their position in the market and identify ways to strengthen customer loyalty. Quality is particularly important in the iron and steel market because the characteristics of these materials have a direct bearing on the safety, durability and service life of construction projects. Consumers may give greater consideration to attributes such as strength and durability because these characteristics affect the structural integrity of buildings and other constructions. Corrosion resistance is also important because it can extend the useful life of the material and reduce maintenance requirements. Temperature resistance and flexibility may further influence product performance under different environmental and operational conditions [11][12]. Growing environmental awareness has also encouraged consumers to consider factors such as recyclability and the environmental friendliness of iron and steel products [13][14]. Examining the importance consumers attach to different quality attributes can assist manufacturers in product development and marketing decisions [15]. Despite the economic importance of the iron and steel sector, much of the existing literature has focused on production processes, technological innovation, industrial efficiency, supply chain management and organisational procurement practices. Comparatively less attention has been given to the purchasing behaviour of individual users. Empirical evidence on the quality preferences, information sources, brand choices and purchasing patterns of individual consumers in the iron and steel market is also limited. This leaves a gap in understanding how individual users assess and select iron and steel products. Addressing this gap can support the development of customer-oriented marketing strategies and the improvement of product offerings in a competitive market.

The present study contributes to the existing literature by examining the purchasing behaviour of individual users of iron and steel materials. It considers the demographic characteristics of consumers, their purchasing practices, sources of information, brand preferences and quality considerations. Examining these aspects provides a clearer understanding of the factors that influence purchase decisions in the iron and steel market. The findings may be useful to manufacturers, dealers and marketers when developing products and marketing programmes that respond to consumer expectations. The study is also relevant in the context of increasing competition among steel manufacturers and greater attention to customer satisfaction. Knowledge of consumer preferences can help firms develop strategies for market penetration, customer retention and brand positioning. The results may help industry stakeholders identify the product attributes that consumers value most and the information channels that influence their purchasing decisions. Such information can support efforts to strengthen competitiveness and sustain growth in the iron and steel sector. Given the role of consumer behaviour in market performance, the study examines the purchasing behaviour and quality preferences of individual users of iron and steel materials. It provides empirical evidence on the factors influencing purchasing decisions and

offers recommendations for strengthening marketing strategies and improving customer satisfaction within the iron and steel industry.

1.1 Statement of the Problem

The iron and steel industry plays an important role in construction and infrastructure development. The growing number of brands and product varieties has given consumers a wider range of choices when purchasing these materials. Individual users may consider several factors before making a purchase, including product quality, durability, strength, corrosion resistance, sources of information and brand reputation. Their preferences can differ according to their requirements and perceptions of product performance. Despite the growing importance of individual users in the iron and steel market, limited attention has been given to their purchasing behaviour and expectations regarding product quality. This may create difficulties for manufacturers and marketers in developing marketing strategies and product offerings that meet consumer needs. There is a need to examine the purchasing behaviour of individual users, identify their preferred brands, assess the sources of information that influence their decisions and determine the quality attributes they consider important when purchasing iron and steel materials. The study is positioned within the consumer behaviour perspective, which views purchasing as a process involving information search, evaluation of available alternatives and selection of products based on perceived attributes and preferences. In the context of iron and steel materials, consumers may evaluate alternatives based on product quality, durability, strength, brand familiarity, information availability and other perceived characteristics. Accordingly, the present study examines consumer purchasing behaviour by considering purchasing practices, information sources, brand preferences and quality attributes. This perspective provides a theoretical basis for interpreting the observed differences in brand preference and the relative importance attached to different product attributes.

1.2 Objectives of the Study

1. To analyse the purchasing behaviour of individual users towards iron and steel materials.
2. To examine the quality preferences and brand choices of individual users in the iron and steel market.

1.3 Hypotheses of the Study

H01: There is no significant difference in the preference for various iron and steel brands among individual users.

1.4 Research Gap

Existing literature on the iron and steel industry has largely focused on production efficiency, technological advancement, supply chain management, industrial performance, organisational procurement practices and market competitiveness. Although several studies have examined steel production, operational efficiency and industrial growth, comparatively limited attention has been given to consumer behaviour in the iron and steel market. In particular, empirical studies focusing on the purchasing behaviour of individual users remain limited. The existing literature provides insufficient evidence on how individual users evaluate and select iron and steel products for residential and other construction purposes. Similarly, the role of information sources, purchasing channels, brand preferences and product quality considerations in consumers' purchasing decisions has not been adequately examined from an individual-user perspective. Much of the available research focuses on organisational buyers, construction firms and industrial procurement rather than individual end-users. Further, limited empirical evidence is available on how consumers assess specific quality attributes such as strength, durability, corrosion resistance, flexibility and environmental friendliness while selecting iron and steel products. These gaps highlight the need for a consumer-oriented investigation of purchasing behaviour, brand preferences and quality considerations in the iron and steel market. Therefore, the present study attempts to address this gap by examining the purchasing behaviour, information sources, brand preferences and quality considerations of individual users of iron and steel materials and providing empirical evidence from the selected study area.

2. RESEARCH METHODS

2.1 Research Design and Area of the Study

The study adopts a descriptive research design to examine the purchasing behaviour and quality preferences of individual users of iron and steel materials. This design is suitable because it allows systematic collection, classification and analysis of information on consumer characteristics, purchasing patterns, brand preferences and quality considerations. It enables the existing behaviour of consumers in the iron and steel market to be examined without manipulating any variables. The study was conducted in Tiruchirappalli Corporation, located in Tiruchirappalli District of Tamil Nadu, India. Tiruchirappalli is one of the major urban centres in Tamil Nadu and has experienced considerable growth in residential, commercial and infrastructure development in recent years. The expansion of construction activities within the corporation limits has increased the demand for iron and steel materials. The presence of many individual users involved in construction and renovation activities makes the area suitable for examining purchasing behaviour, brand preferences and perceptions of product quality.

2.2 Nature and Sources of Data and Sampling Technique

The study is primarily based on primary data collected from individual users of iron and steel materials in Tiruchirappalli Corporation. For the purpose of the study, individual users refer to persons who are directly involved in the purchase and use of iron and steel materials for construction and related activities. The respondents were selected from the study area based on their experience and involvement in purchasing iron and steel materials. A total of 110 respondents were included in the study. Primary data were collected through a structured questionnaire covering demographic characteristics, purchasing practices, sources of information, brand preferences and quality attributes considered while purchasing iron and steel materials. The respondents were selected using the simple random sampling technique to provide an appropriate representation of individual users within the study area. Secondary information was collected from books, journals, research articles, industry reports and other published sources to provide conceptual and empirical support for the study.

2.3 Data Collection Instrument and Analytical Framework

A structured questionnaire was used to collect primary data from the respondents. It included questions on personal profile, purpose of purchase, mode of purchase, sources of information, preferred company and quality attributes of iron and steel materials. The instrument was prepared to obtain the information required to meet the objectives of the study. After the data were collected, they were edited, coded, classified and tabulated before analysis. Appropriate statistical techniques were then applied to examine the information and interpret the results. Frequency and percentage analyses were used to describe the demographic characteristics and purchasing behaviour of the respondents. The Chi-Square Goodness-of-Fit Test was used to determine whether significant differences existed in the preference for different iron and steel brands. The Weighted Mean Score and Ranking Technique were used to assess and rank the quality attributes considered important when purchasing iron and steel materials. The results from these methods provided the basis for the subsequent interpretation and discussion. The research instrument was developed in accordance with the objectives of the study and the variables identified from the relevant literature on consumer purchasing behaviour, brand preference and product quality. The questionnaire consisted of questions relating to the personal profile of respondents, purchasing practices, sources of information, preferred brands and quality attributes of iron and steel materials. The questions were structured in a simple and understandable manner to ensure that respondents could provide relevant information about their purchasing behaviour. The content of the questionnaire was reviewed to ensure that the items adequately covered the objectives of the study and the major aspects of consumer purchasing behaviour considered in the analysis. The finalized questionnaire was subsequently used for the collection of primary data.

2.4 Statistical Tools Used

The collected data were edited, coded, classified and analysed using appropriate descriptive and inferential statistical techniques. Frequency and percentage analyses were used to describe the demographic characteristics and purchasing practices of the respondents. The Chi-square Goodness-of-Fit Test was applied to examine whether

the observed distribution of preferences across the selected iron and steel brands differed significantly from an equal distribution. The test was conducted at the 5 per cent level of significance. The Weighted Mean Score and Ranking Technique were used to assess the relative importance attached by respondents to the selected quality attributes of iron and steel materials. These techniques provided a systematic basis for describing purchasing behaviour, examining differences in brand preference and ranking the quality attributes considered by individual users.

3. DATA ANALYSIS AND DISCUSSION

This section analyses the primary data collected from 110 individual users of iron and steel materials in Tiruchirappalli Corporation. It examines the demographic characteristics of the respondents, their purchasing practices, sources of information, brand preferences and quality considerations. Frequency and percentage analysis are used to present the findings, along with appropriate statistical techniques to examine differences in brand preferences and the importance given to different quality attributes. The discussion considers these patterns in relation to the purchasing behaviour of individual users in Tiruchirappalli Corporation and provides a clearer understanding of consumer characteristics and preferences in the study area.

Table 1: Demographic Profile of the Respondents

Variable	Category	Frequency (n = 110)	Percentage
Gender	Male	87	79.1
	Female	23	20.9
Age	Below 25 years	4	3.6
	25–35 years	8	7.3
	36–45 years	33	30
	46–55 years	53	48.2
	Above 55 years	12	10.9
Educational Qualification	Up to Higher Secondary	9	8.2
	Diploma	25	22.7
	Under Graduate	49	44.5
	Post Graduate	24	21.8
	Professional	3	2.7
Monthly Income	Below ₹25,000	6	5.5
	₹25,001–30,000	5	4.5
	₹30,001–35,000	8	7.3
	₹35,001–40,000	29	26.4
	Above ₹40,000	62	56.4
Domicile	Urban	91	82.7
	Semi-Urban	9	8.2
	Rural	10	9.1
Occupation	Government Employee	22	20
	Business/Self-employed	34	30.9
	Private Employee	48	43.6

	Professional	6	5.5
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Source: Computed from Primary Data

The demographic characteristics of the 110 respondents from Tiruchirappalli Corporation are reported in Table 1. The profile covers gender, age, educational qualification, monthly income, domicile and occupation and provides the background needed to understand the individual users included in the study. Male respondents form the larger part of the sample, with 87 respondents or 79.1 per cent, while female respondents number 23 or 20.9 per cent. The higher proportion of male respondents shows that men formed the major group of individual users covered by the study. In Tiruchirappalli Corporation, this may be related to the greater involvement of men in construction activities and in the direct purchase or selection of iron and steel materials for residential construction and renovation. This distribution reflects the composition of the sample and does not establish that gender determines purchasing behaviour. The age distribution is concentrated mainly among respondents between 36 and 55 years. Those aged 46–55 years form the largest group, with 53 respondents or 48.2 per cent, followed by the 36–45 age group with 33 respondents or 30.0 per cent. Respondents above 55 years account for 10.9 per cent, while those aged 25–35 years represent 7.3 per cent. Only 3.6 per cent of respondents are below 25 years. The greater presence of respondents in the 36–55 age groups may be associated with their involvement in household construction, renovation and other activities that require the purchase of iron and steel materials. Their experience with construction-related purchases may also give them greater familiarity with different products and brands. Undergraduate respondents form the largest educational group, with 49 respondents or 44.5 per cent. Diploma holders represent 22.7 per cent, while postgraduates account for 21.8 per cent. Those educated up to higher secondary level represent 8.2 per cent and respondents with professional qualifications account for 2.7 per cent. A considerable proportion of the respondents therefore have higher secondary, diploma or degree-level education. This educational background may help consumers obtain information about iron and steel products from different sources and compare product characteristics, brands and prices before making a purchase.

The income figures show that respondents earning above ₹40,000 per month form the largest group, with 62 respondents or 56.4 per cent. Another 29 respondents or 26.4 per cent earn between ₹35,001 and ₹40,000. Those earning ₹30,001–35,000 represent 7.3 per cent, while 5.5 per cent earn below ₹25,000 and 4.5 per cent fall within the ₹25,001–30,000 category. Most respondents therefore reported a monthly income above ₹35,000. This income pattern may be relevant in the study area because the purchase of iron and steel materials can involve substantial expenditure, particularly for residential construction and renovation. Respondents with higher incomes may have greater purchasing capacity and may consider quality, durability and brand reputation along with price when selecting products. The domicile figures show that 91 respondents, representing 82.7 per cent of the sample, are from urban areas. Semi-urban respondents account for 8.2 per cent, while rural respondents represent 9.1 per cent. The predominance of urban respondents is consistent with the location of the study within Tiruchirappalli Corporation. The urban setting also provides a relevant context for examining purchasing behaviour because consumers may have greater exposure to construction material dealers, different brands, advertisements and other sources of market information. Private employees form the largest occupational group, with 48 respondents or 43.6 per cent. Business and self-employed respondents represent 30.9 per cent, followed by government employees at 20.0 per cent. Professionals account for 5.5 per cent of the sample. The respondents therefore come from different employment and income backgrounds, although private employees form the largest group. This occupational diversity may be associated with differences in purchasing capacity, construction requirements and access to market information. Business and self-employed respondents may also have greater familiarity with prices and suppliers because of their involvement in commercial activities.

The respondent profile is predominantly male, with the largest age group being 46–55 years. Most respondents are undergraduates, earn above ₹40,000 per month, reside in urban areas and work in the private sector. These characteristics provide the socio-economic background for interpreting the subsequent findings on purchasing practices, sources of information, brand preferences and quality attributes. They also provide the context within which individual users in Tiruchirappalli Corporation make decisions about purchasing iron and steel materials.

Table 2: Work Experience and Annual Purchase Expenditure

Variable	Category	Frequency (n = 110)	Percentage
Duration of Working as a Mason	Less than 3 years	20	18.2
	3–5 years	57	51.8

	6–8 years	25	22.7
	9–12 years	3	2.7
	More than 12 years	5	4.5
Annual Purchase Expenditure	Below ₹50,000	4	3.6
	₹50,000–1,00,000	4	3.6
	₹1,00,001–3,00,000	2	1.8
	₹3,00,001–5,00,000	9	8.2
	Above ₹5,00,000	91	82.7

Source: Computed from Primary Data

The figures in Table 2 describe the respondents in terms of their duration of work as masons and their annual expenditure on iron and steel materials in Tiruchirappalli Corporation. These characteristics help to understand their practical experience and the extent of their involvement in purchasing iron and steel materials. More than half of the respondents, 57 or 51.8 per cent, have 3–5 years of experience as masons. This is followed by 25 respondents or 22.7 per cent with 6–8 years of experience. Those with less than 3 years of experience represent 18.2 per cent of the sample. Respondents with 9–12 years of experience account for 2.7 per cent, while 4.5 per cent have more than 12 years of experience. The largest group therefore falls within the 3–5 year experience category. This indicates that many respondents have several years of practical experience in masonry and construction-related work. Such experience may have given them familiarity with different types of iron and steel materials, their applications and the quality characteristics considered during construction. The figures describe the experience profile of the respondents but do not establish a direct relationship between work experience and purchasing preferences.

The annual expenditure figures show a strong concentration at the higher expenditure level. A large majority of respondents, 91 or 82.7 per cent, reported annual expenditure above ₹5,00,000 on iron and steel materials. Another 9 respondents or 8.2 per cent reported expenditure between ₹3,00,001 and ₹5,00,000. Expenditure below ₹50,000 and between ₹50,000 and ₹1,00,000 was reported by 3.6 per cent of respondents in each category, while 1.8 per cent reported expenditure between ₹1,00,001 and ₹3,00,000. The large number of respondents with annual expenditure above ₹5,00,000 indicates substantial involvement in purchasing iron and steel materials in Tiruchirappalli Corporation. This level of expenditure may be linked to the scale and frequency of construction-related activities undertaken by the respondents. It also means that choices concerning brand, quality, durability and other product characteristics may have considerable financial implications. The respondent profile in Table 2 is therefore marked by several years of masonry experience and relatively high annual expenditure on iron and steel materials. These characteristics provide useful context for understanding their responses regarding information sources, preferred companies and quality attributes.

Table 3: Purpose of Using Iron and Steel Materials

Purpose	Yes (Freq.)	Yes (%)	No (Freq.)	No (%)
Residential	105	95.5	5	4.5
Commercial	42	38.2	68	61.8
Corporate	1	0.9	109	99.1
Government Projects	2	1.8	108	98.2

Source: Computed from Primary Data

The purpose-wise use of iron and steel materials among respondents in Tiruchirappalli Corporation is shown in Table 3. The respondents were asked about their use of these materials for residential, commercial, corporate and government project purposes. Residential use was reported by 105 respondents or 95.5 per cent, making it the most common purpose among the respondents. Only 5 respondents or 4.5 per cent reported otherwise. The high proportion of residential use indicates that house construction, renovation and related activities form the main area of demand among the individual users covered by the study. This pattern is consistent with individual-level purchasing, where iron and steel materials are commonly required for residential works. Commercial use was reported by 42 respondents or 38.2 per cent, while 68 respondents or 61.8 per cent did not use these materials

for commercial purposes. Commercial applications are therefore relevant to a considerable group of respondents, although they are less common than residential use. Such purchases may be related to shops, small business establishments and other commercial structures within Tiruchirappalli Corporation. Corporate use was reported by only one respondent or 0.9 per cent, while 109 respondents or 99.1 per cent reported no corporate use. Corporate construction requirements therefore form only a small part of the usage pattern among the respondents. This is consistent with the focus of the study on individual users rather than large corporate or institutional buyers. Government project use was similarly limited. Only 2 respondents or 1.8 per cent reported using iron and steel materials for government projects, while 108 respondents or 98.2 per cent reported no such use. Government projects consequently have little presence in the purchasing activities of the respondents. The pattern shows that residential construction is the main purpose for using iron and steel materials among the respondents, followed by commercial use. Corporate and government project applications remain very limited. This distribution reflects the individual-user focus of the study and provides a useful context for examining their sources of information, brand preferences and quality considerations.

Table 4: Sources of Information for Purchasing Iron and Steel Materials (n = 110)

Source of Information	Yes (Freq.)	Yes (%)	No (Freq.)	No (%)
Own Information	106	96.4	4	3.6
Advertisement	105	95.5	5	4.5
Friends and Relatives	24	21.8	86	78.2
Product Experts	6	5.5	104	94.5
Salespersons	9	8.2	101	91.8
Internet	88	80	22	20

Source: Computed from Primary Data

The sources of information used by respondents when purchasing iron and steel materials are reported in Table 4. The figures show that respondents used several sources, including personal knowledge, advertisements, the internet and interpersonal contacts, although their reliance on these sources varied considerably. Own information was the most widely used source, with 106 respondents or 96.4 per cent reporting its use. Only 4 respondents or 3.6 per cent did not rely on their own information. This indicates that respondents largely drew on their existing knowledge, previous experience and familiarity with iron and steel materials when making purchasing decisions. Their involvement in construction-related activities may have contributed to this reliance on personal knowledge. Advertisements were also widely used, with 105 respondents or 95.5 per cent identifying them as a source of information, while 5 respondents or 4.5 per cent did not. The high level of reliance on advertisements indicates that marketing communication has considerable visibility among individual users in the study area. Advertisements can provide information about brands, product characteristics and availability and may assist consumers when comparing alternatives. The internet was used by 88 respondents or 80.0 per cent, while 22 respondents or 20.0 per cent did not use it as a source. This shows that digital sources form an important part of the information available to consumers purchasing iron and steel materials in Tiruchirappalli Corporation. The relatively high usage may be related to the wider availability of information through websites, digital advertisements and other internet-based sources. The data, however, do not indicate the specific online platforms or types of information accessed by the respondents. Friends and relatives were reported as a source by 24 respondents or 21.8 per cent, while 86 respondents or 78.2 per cent did not rely on them. Their role in purchasing decisions was therefore considerably smaller than that of personal information, advertisements and the internet. Salespersons were used by only 9 respondents or 8.2 per cent, whereas 101 respondents or 91.8 per cent did not obtain information from this source. Product experts were used by 6 respondents or 5.5 per cent, while 104 respondents or 94.5 per cent did not rely on them. Professional and intermediary sources therefore had a relatively limited role in the information-seeking behaviour of the respondents. The information pattern shows that respondents mainly relied on their own knowledge and advertisements, followed by the internet. Friends and relatives, salespersons and product experts were used much less frequently. This indicates that individual users in the study area generally depended on their existing knowledge and commercially available information when making purchasing decisions. These information sources are also relevant to understanding brand preferences because they influence the awareness and evaluation of different iron and steel brands.

Information sources also form an important part of the purchasing process of individual users. The respondents reported their own information and advertisements as the most commonly used sources, accounting for 96.4 per cent and 95.5 per cent respectively, while 80.0 per cent relied on the internet. The relatively high use of these sources indicates that consumers obtain information through both personal knowledge and external communication channels before making purchasing decisions. The importance of the internet further indicates the growing role of digital information in the selection of construction materials. However, the present study identifies these sources as commonly used sources of information and does not statistically establish that they directly cause or determine the final purchase decision.

Table 5: Preferred Company for Purchasing Iron and Steel Materials

Company	Frequency	Percentage
SAIL	14	12.7
TATA	9	8.2
JSW	17	15.5
RINL	9	8.2
JINDAL	23	20.9
BHUSHAN	3	2.7
VISA	13	11.8
FACOR	6	5.5
MESCO	7	6.4
ESSAR	9	8.2

Source: Computed from Primary Data

The company-wise distribution in Table 5 shows differences in the brand choices of individual users purchasing iron and steel materials in Tiruchirappalli Corporation. The respondents selected a range of companies, indicating that their preferences were spread across several available brands. JINDAL was the most preferred company, with 23 respondents or 20.9 per cent selecting it. JSW followed with 17 respondents or 15.5 per cent. SAIL was preferred by 14 respondents or 12.7 per cent, while VISA was selected by 13 respondents or 11.8 per cent. TATA, RINL and ESSAR each received 9 responses, representing 8.2 per cent each. MESCO was preferred by 7 respondents or 6.4 per cent, followed by FACOR with 6 respondents or 5.5 per cent. BHUSHAN recorded the lowest preference, with 3 respondents or 2.7 per cent. JINDAL and JSW together represented 36.4 per cent of the respondents and occupied the two highest positions in terms of preference. Their relatively stronger position among the respondents may be related to perceptions of product quality, reliability, availability or familiarity with the brands, although the present data do not directly establish the reasons for these choices. The preferences were spread across all ten companies, with several brands receiving moderate levels of selection. This distribution indicates competition among iron and steel brands in the study area and shows that individual users consider different alternatives when making their purchases. FACOR, MESCO and BHUSHAN received comparatively fewer selections. The lower preference for these companies cannot, however, be attributed to any specific factor based on the present data because the table records only the frequency of brand preference. JINDAL recorded the highest preference, followed by JSW, SAIL and VISA, while BHUSHAN received the lowest preference among the companies considered. The differences observed across the brands provide the basis for the Chi-square test used to determine whether the variation in company preferences is statistically significant.

Table 6. Quality Attributes Considered While Purchasing Iron and Steel Materials

Quality Attributes	Never	Rarely	Sometimes	Often	Always
Corrosion Resistance	0 (0.0)	0 (0.0)	28 (25.5)	16 (14.5)	66 (60.0)
Strength	0 (0.0)	0 (0.0)	0 (0.0)	9 (8.2)	101 (91.8)
Durability	0 (0.0)	0 (0.0)	9 (8.2)	21 (19.1)	80 (72.7)
Temperature Resistance	0 (0.0)	3 (2.7)	13 (11.8)	31 (28.2)	63 (57.3)



Flexibility	0 (0.0)	3 (2.7)	16 (14.5)	37 (33.6)	54 (49.1)
Attractive Appearance	0 (0.0)	4 (3.6)	10 (9.1)	44 (40.0)	52 (47.3)
Environmental Friendliness	0 (0.0)	0 (0.0)	16 (14.5)	44 (40.0)	50 (45.5)
Fineness	0 (0.0)	0 (0.0)	15 (13.6)	55 (50.0)	40 (36.4)

Note: Figures in parentheses indicate percentages. Source: Computed from Primary Data

The importance given to different quality attributes by individual users when purchasing iron and steel materials is shown in Table 6. The respondents evaluated eight attributes using five response categories ranging from Never to Always. The distribution indicates the extent to which different product characteristics influence purchasing decisions in Tiruchirappalli Corporation. Strength received the greatest consideration among the attributes examined. A total of 101 respondents or 91.8 per cent reported that they always consider strength when purchasing iron and steel materials, while the remaining 9 respondents or 8.2 per cent reported that they consider it often. None of the respondents selected never, rarely or sometimes. Strength therefore appears to be a basic consideration for individual users in the study area. Since iron and steel materials are widely used in construction, the high importance given to strength is consistent with the need for materials that can meet structural requirements. Durability also received considerable attention from the respondents. About 80 respondents or 72.7 per cent reported that they always consider durability, while 21 respondents or 19.1 per cent consider it often. Only 9 respondents or 8.2 per cent selected sometimes and none selected never or rarely. This distribution indicates that respondents place considerable importance on the expected service life of iron and steel materials. For residential and commercial construction in Tiruchirappalli Corporation, durable materials may be preferred because they can reduce the need for frequent replacement and maintenance. Corrosion resistance was another attribute that received considerable attention. A total of 66 respondents or 60.0 per cent reported that they always consider corrosion resistance, while 16 respondents or 14.5 per cent consider it often. Another 28 respondents or 25.5 per cent selected sometimes. No respondent selected never or rarely. The figures show that protection against corrosion is an important consideration for most users in the study area. This may be particularly relevant when iron and steel materials are exposed to environmental conditions that can affect their service life.

Temperature resistance was always considered by 63 respondents or 57.3 per cent, while 31 respondents or 28.2 per cent considered it often. Another 13 respondents or 11.8 per cent selected sometimes and 3 respondents or 2.7 per cent selected rarely. None of the respondents selected never. Temperature resistance therefore receives considerable attention, although it is less strongly considered than strength, durability and corrosion resistance. For flexibility, 54 respondents or 49.1 per cent reported that they always consider the attribute, while 37 respondents or 33.6 per cent consider it often. Another 16 respondents or 14.5 per cent selected sometimes and 3 respondents or 2.7 per cent selected rarely. The responses show that flexibility is important to many users, although the distribution across the response categories is wider than that observed for strength and durability. Attractive appearance shows a more balanced distribution across the response categories. About 52 respondents or 47.3 per cent reported that they always consider appearance, while 44 respondents or 40.0 per cent consider it often. A further 10 respondents or 9.1 per cent selected sometimes and 4 respondents or 3.6 per cent selected rarely. No respondent selected never. Appearance is therefore considered by a substantial proportion of users, although functional characteristics receive greater attention. Environmental friendliness was always considered by 50 respondents or 45.5 per cent, while 44 respondents or 40.0 per cent considered it often. Another 16 respondents or 14.5 per cent selected sometimes. None of the respondents selected never or rarely. Environmental considerations are therefore present in the purchasing decisions of individual users in Tiruchirappalli Corporation, although they receive less consistent attention than characteristics such as strength and durability. Fineness was considered often by 55 respondents or 50.0 per cent, while 40 respondents or 36.4 per cent considered it always. The remaining 15 respondents or 13.6 per cent selected sometimes. No respondent selected never or rarely. Fineness is therefore considered by the respondents, with responses concentrated more in the often category than in always. The responses show that strength receives the most consistent consideration, followed by durability and corrosion resistance. Temperature resistance, flexibility, attractive appearance, environmental friendliness and fineness are also considered by many respondents, although the degree of emphasis differs across the attributes. The pattern indicates greater attention to functional and performance-related characteristics, particularly those associated with the strength and service life of iron and steel materials. These results provide the basis for the ranking analysis used to compare the relative importance of the quality attributes.

The findings on quality attributes indicate that individual users place greater emphasis on functional and performance-related characteristics when purchasing iron and steel materials. Strength received the highest level of consideration, with 91.8 per cent of respondents reporting that they always consider this attribute. Durability

and corrosion resistance were also given considerable importance, indicating that consumers are primarily concerned with the expected performance, reliability and service life of the materials. In comparison, attributes such as attractive appearance, environmental friendliness and fineness received relatively lower consideration. This pattern suggests that purchasing decisions in the study area are more strongly associated with functional requirements than with appearance-related characteristics. The finding is particularly relevant to construction-related purchases, where the perceived strength, durability and resistance of materials are important considerations.

4. IMPLEMENTATION/TESTING

To test the formulated hypotheses and achieve the objectives of the study, appropriate statistical techniques were employed. The analysis focused on identifying the preference for various iron and steel brands and determining the relative importance of quality attributes considered by respondents while purchasing iron and steel materials.

Hypothesis

H₀: There is no significant difference in the preference for various iron and steel brands among individual users.

Table 7. Brand Preference of Respondents and Chi-Square Test Results

Brand	Frequency	Percentage	Statistic	Value
SAIL	14	12.7	Chi-Square (χ^2)	28.184
TATA	9	8.2	df	9
JSW	17	15.5	p-value	0.00089
RINL	9	8.2	Significance Level	0.05
JINDAL	23	20.9	Decision	Reject H ₀
BHUSHAN	3	2.7		
VISA	13	11.8		
FACOR	6	5.5		
MESCO	7	6.4		
ESSAR	9	8.2		
Total	110	100		

Source: Computed from Primary Data

The brand preference of respondents and the results of the Chi-square Goodness-of-Fit Test are presented in Table 7. JINDAL recorded the highest preference, with 23 respondents (20.9%), followed by JSW with 17 respondents (15.5%), SAIL with 14 respondents (12.7%) and VISA with 13 respondents (11.8%). TATA, RINL and ESSAR were each preferred by 9 respondents (8.2%), while MESCO, FACOR and BHUSHAN accounted for 6.4%, 5.5% and 2.7% of respondents, respectively. The distribution shows that respondents' preferences were spread across all ten brands, although the levels of preference varied considerably among the brands. The Chi-square Goodness-of-Fit Test produced a calculated value of 28.184 with 9 degrees of freedom and a p-value of 0.00089. Since the p-value is less than the 0.05 level of significance, the null hypothesis is rejected. The result indicates a statistically significant difference in brand preferences among individual users in Tiruchirappalli Corporation. Thus, the respondents did not show an equal preference for the brands included in the study. JINDAL and JSW occupied the first and second positions, respectively, whereas BHUSHAN, FACOR and MESCO recorded relatively lower preferences. The observed variation may be associated with respondents' perceptions of product quality, durability, strength, brand familiarity, availability and previous purchasing experience. However, these factors were not independently tested in the present analysis; therefore, they should be considered as possible explanations rather than established determinants of brand preference. The finding suggests that brand preference is an important aspect of purchasing behaviour in the study area. The significant variation in preferences indicates that individual users distinguish between competing brands rather than considering all available brands as equally acceptable alternatives. This finding can be interpreted alongside the quality considerations reported in the study, particularly the importance attached to strength, durability and corrosion resistance. Nevertheless, the Chi-square

test establishes only that the distribution of brand preferences differs significantly and does not identify the specific factors responsible for the differences. Further studies using appropriate multivariate techniques could examine whether product quality, price, availability, information sources, brand familiarity and other consumer characteristics significantly explain brand selection. The present finding therefore provides useful evidence for manufacturers, dealers and marketers regarding the differing levels of brand preference among individual users in Tiruchirappalli Corporation.

5. CONCLUSION

The study examined the purchasing behaviour, brand preferences and quality considerations of individual users of iron and steel materials in Tiruchirappalli Corporation, Tamil Nadu, based on primary data collected from 110 respondents. The findings indicate that the respondents were predominantly male, with the largest age group being 46–55 years. A considerable proportion of respondents had undergraduate-level education, earned above ₹40,000 per month and resided in urban areas, while private employees constituted the largest occupational group. The respondents also demonstrated substantial involvement in construction-related activities, with more than half having 3–5 years of experience as masons and 82.7 per cent reporting annual expenditure of more than ₹5,00,000 on iron and steel materials. Residential construction was the major purpose of purchase, reported by 95.5 per cent of respondents, followed by commercial use at 38.2 per cent. With regard to information sources, respondents mainly relied on their own information and advertisements, reported by 96.4 per cent and 95.5 per cent, respectively, while the internet was used by 80.0 per cent of respondents. This indicates the importance of both personal knowledge and external information channels in the purchasing process. The findings on brand preference show that JINDAL was the most preferred company at 20.9 per cent, followed by JSW at 15.5 per cent, SAIL at 12.7 per cent and VISA at 11.8 per cent. The Chi-square Goodness-of-Fit Test revealed a statistically significant difference in brand preferences ($\chi^2 = 28.184$, $df = 9$, $p = 0.00089$). Since the p-value is below the 0.05 level of significance, the null hypothesis was rejected, indicating that brand preferences were not uniformly distributed among the respondents. However, the statistical result establishes differences in brand preference but does not independently explain the reasons for these differences. The findings relating to quality attributes indicate that functional and performance-related characteristics received greater consideration from respondents. Strength was the most important attribute, with 91.8 per cent of respondents reporting that they always considered it while purchasing iron and steel materials, followed by durability and corrosion resistance. Other attributes considered were temperature resistance, flexibility, attractive appearance, environmental friendliness and fineness. The greater consideration given to strength, durability and corrosion resistance suggests that respondents attach greater importance to product performance, reliability and expected service life than to appearance-related characteristics. Overall, the study provides consumer-oriented evidence on purchasing practices, information sources, brand preferences and quality considerations in the iron and steel market. The findings may be useful to manufacturers, dealers and marketers in strengthening product quality, communicating functional product benefits and improving advertising and digital information strategies. However, the findings are limited to the selected respondents and study area. Future studies may consider larger samples and additional statistical techniques to examine the determinants of brand preference and purchasing behaviour in greater depth.

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