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Consumer Satisfaction in Ownership of Prebuilt Homes

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CONSUMER SATISFACTION IN OWNERSHIP OF PREBUILT HOMES

by

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ABSTRACT

Consumer Satisfaction in Ownership

of Prebuilt Homes

by

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This study investigated reasons buyers invest in prebuilt houses, and if the reasons prompting that selection are being satisfied. The study was taken in Box Elder County, Utah, and measured wife and husband satisfaction with their prebuilt home independently.

Objective No. 1 was to determine the reasons why these consumers purchased prebuilt homes. The most frequent reason was price. There was no significant difference between the husbands' and the wives' responses to the reasons for purchasing the houses.

Objective No. 2 was to determine the satisfaction of the owners of prebuilt homes with those homes. In general, the wives were more satisfied in every category than the husbands. Overall satisfaction was higher with both husbands and wives than their satisfaction with any one specific element of the overall project.

(80 pages)

CHAPTER I

INTRODUCTION

Statement of Problem

The choice to buy prebuilt homes was made by approximately one-third of the purchasers of new homes in Box Elder County, Utah in 1977 (Johnson, 1978). Factors that could have influenced this choice were consumer financing, convenience of acquisition, price, design, construction, availability of other alternatives in housing, and advertisement.

If prebuilt home producers can target home buyer markets, and produce to the satisfaction of those markets, a major breakthrough in providing available, less expensive housing can be made.

Background of Problem

Prebuilt houses are not a new idea. The English brought a panelized wood house to Cape Ann for use by a fishing fleet in 1624 (Battelle Memorial Institute, 1967). Parts of houses that were already built were brought from England during early colonization. Thomas A. Edison in his patent No. 1,123,261, dated December 22, 1908, specified a complete system of cast iron molds into which a cement house could be poured. This pioneering venture in prefabricated housing failed to win acceptance (Josephson, 1959). During World War II, prebuilt housing was used at defense installations (Pearson, 1972).

Many large companies were unsuccessful because of bad business methods or inaccurate market analysis. In the late 1940's and early 1950's the Lustron Corporation set itself up to produce 100 single family homes a day, using industrial techniques. Two thousand houses were sold before bankruptcy developed, due to under-capitalization, failure to establish an effective nationwide marketing and distribution network, and inability to produce homes at prices below conventionally built homes (Pearson, 1972). The prebuilt housing industry has not yet come to fruition.

However, there are companies that have been successful in the industry. Prebuilt homes are the backbone of the housing industry in areas where lack of housing is at the emergency level. A large influx of people resulting from exploration for oil in Eastern Utah is making heavy demands on housing. In Rexburg, Idaho, many homes destroyed by the Teton Dam disaster were replaced by prebuilt homes (Allen, 1978).

A substantial portion of the nation's families are living in substandard conditions. For the poor, the elderly, the single person, ethnic minority, and the large family, housing conditions are still severe, and may be getting worse (Hartman, 1975). The Housing Act of 1968 reaffirmed the goal set by Congress in 1949 to achieve a decent home and suitable living environment for every American family. By the construction or rehabilitation of 26 million housing units, Congress projected that this goal could be achieved

within the next decade. These figures were a rough average of the estimates of need derived by the U.S. Department of Housing and Urban Development, the National Commission on Urban Problems, and the National Commission on Civil Disorders.

From 1970 to 2000, the National Committee on Urban Growth has proposed the construction of 100 new cities, each with an average population of 100,000, plus ten new cities containing at least 1,000,000 people each. Despite this very dramatic objective, the realization of this proposal would accommodate only 20% of the anticipated population growth in the same period (Carreiro, 1970). United States population is expected to increase from 200,000,000 to 260,000,000 people before the year 2000 (Office of Management and Budget, 1976).

The United States has a housing problem which involves the production of sufficient adequate housing at a price consumers can afford. Long term inflation is an important factor. Average building construction costs have increased 9.6% from 1976 to 1977 for the United States as a whole. Housing costs in the Pacific Coast and Rocky Mountain states increase 12.1% between September 1976 and September 1977 (Architectural Record, 1978). The longer the construction period, the more acute the inflationary impact.

Prebuilt home construction is important because it uses construction skills less wastefully, and allows the industry to double output by assembly line production (Langewiesche, 1972).

Prebuilt home construction was spurred as part of Operation Breakthrough, a federal program designed to stimulate production of

factory-built housing (Newmark & Thompson, 1977). Prefabrication, modular units, systems building, stated Peter Blake, architect (1975), are symbols of one of modern architecture's fondest dreams. That dream is applying sophisticated technology to the construction industry.

Indoor, mass-produced assembly-line production of housing has several advantages. Interference and delays from inclement weather are averted. Large savings on building materials can be achieved through mass purchasing and direct ordering from manufacturers and wholesalers. Guaranteed work will reduce hourly wages to levels lower than the very high rates that craftsmen now demand. Some companies can produce a home in a few days, as opposed to the several months that on-site construction ordinarily takes. This is a critical factor, if housing production is to be doubled over the next ten years. Faster construction time also means more efficient use of scarce and costly capital and consequent reduction in the per unit cost of construction financing (Hartman, 1975).

The best chance for success for prebuilt house companies is to know the available markets for prebuilt houses, select the particular market segment they want to serve, then build houses that are obtainable by that market segment and satisfying to the needs of house buyers in that segment. Prebuilt companies must also build a dealer organization comprised basically of local real estate developers (Campbell, 1972). Real estate brokers and their sales organization can be a prime distribution channel (Pearson, 1972).

The Purpose

The purpose of the study was to investigate reasons buyers invested in prebuilt houses, as opposed to stick-built homes, and if reasons prompting this selection were being satisfied. Data collected were used to measure wife and husband satisfaction independently, and the sample was based in Box Elder County, Utah, where emergency for housing is not high.

The study is of interest to the prebuilt home marketers because it supplies information useful in targeting their markets, and satisfying their customers. This information is useful in future designs and advertising.

The Objectives

1. To determine the reasons why consumers buy prebuilt homes.
2. To determine the satisfaction of the owners with their pre-built homes.

Hypotheses

1. There is no significant difference in the responses within the husband group or within the wife group to the reasons why the prebuilt houses were purchased.
2. There is no significant relationship between the main floor square footage and the type of mortgage obtained on the prebuilt house.
3. There is no significant difference between the prebuilt home owners' overall satisfaction with their home and their satisfaction with the construction of the house.

4. There is no significant difference between the husbands' reason for buying the house and the wives' reason for buying the house.
5. There is no significant difference between the husbands' overall satisfaction and the wives' overall satisfaction with the house.

Delimitations

There has been very little research done on prebuilt or modular housing. This thesis is directed toward reasons why consumers buy prebuilt houses and their satisfaction with those houses. The research does not deal with:

1. The future market for used prebuilt homes.
2. The social impact of prebuilt homes on their occupants or the community.
3. The construction of prebuilt homes in quality as compared with stick-built.
4. The image of prefabricated housing held by the public.

Definition of Terms

Boxes. Modular units.

Contractors. The major agent in on-site construction who contracts to produce the completed house.

Dealer Service. Dealer services includes: helping consumers select the prebuilt house and all its features, oversees on-site construction and house installation, oversees on-site

completion and repairs, and is liaison between prebuilt housing company and consumer.

Detail work. Small sections or units, such as cabinets.

Farmers Home Administration, FmHA. An agency of the U.S. Department of Agriculture. FmHA makes home loans, as well as agriculture loans.

Federal Housing Administration, FHA. A government department that insures individual loans made with private loaning institutions or mortgage companies.

Modular Units. Prebuilt housing that is built in a factory and then shipped to its permanent site. Several modulars connected together make one structure.

On-site Construction. Houses built entirely at the site.

Points. A fee charged by a lender for making a loan. Points are used to even differences in interest rates.

Prebuilt. Houses built in a factory.

Prefabricated Houses. Houses built in a factory.

Site. The area on which structures are to be located.

Stick built. Houses built at the site. Some preassembled component parts may be used.

Subcontractor. Those contractors who are employed by the major contractor to do only a portion of the work.

Supplier. Those businesses who supply the basic materials such as lumber, nails, paneling, wire, etc.

Target. A device or practice of which the main purpose is to reach a predetermined objective.

CHAPTER II

RESEARCH OF LITERATURE

What are Modulars and Prebuilt Homes

A problem of semantics is substantiated when an attempt is made to differentiate between prefabrication, pre-engineered, prebuilt, modular, industrialized building, building system, and many other terms starting to be used within the industry. These terms are almost synonymous and imply that an industrialized procedure has been applied to the building process. The use of these additional terms also represents an attempt by the industry to do away with the term prefabrication and its connotations of "cheapness" that became associated with the word immediately following World War II (Battele Memorial Institute, 1967).

The term "prefabrication" is commonly used throughout the construction industry--yet there is little agreement on the meaning of the word. To some people it means that a structure has been preassembled off site in a factory. For others, a house is considered to be prefabricated, if at least two of the large structural components are preassembled at a factory and transported to site for erection. Some consider on-site fabrication of components to be prefabrication, others not. Furthermore, many companies are called "prefabricators" if they specialize in the manufacture of one or more components that are used in the building process (Battele Memorial Institute, 1967).

Why is the term so ambiguous? Much of this confusion exists because prefabrication is a generic term used to describe a manufacturing process through which a building, structure, house, shell, component or piece is produced. Inherent in this process are certain integral operations such as precutting, preassembly, prefinishing, and final assembly. Hence, all companies that participate in this process--regardless of the degree of involvement--can be called "prefabricators" (Battelle Memorial Institute, 1967).

It is obvious from this discussion that prefabrication has no precise definition that is applicable throughout the construction industry. For the purpose of this thesis, the word prebuilt will be used as a general term to denote a structure that has been assembled in total before final placement. The structure may be shipped in sections to facilitate moving. The sections are then joined at the site.

Prebuilt housing is precision-engineered, manufactured under factory conditions, and subject to automated housing techniques providing quality control. Doors and windows fit. Carpeting is laid with exacting care. Electrical and plumbing systems are tested individually before the units are approved for shipment. The house comes structurally complete and fully insulated. Exterior variations are provided to give a custom-built look. The construction makes for a structural framing system of better than average strength that can withstand factory handling, transportation and site erection stresses. The foundation is the only major carryover from conventional construction (Pearson, 1972).

Prebuilt housing comes in small houses, large houses, two-story houses, apartment houses, row houses, office buildings, motels, churches, and schools. All are composed of "modules" each the size of a trailer truck so it can be transported on the highway system. Some builders call these modules "stack boxes." The module builders call a regular house, built at the site from bits and pieces, a "stick-built" (Langerwiesche, 1972).

There are many variations of the prebuilt house. You can build out of wood, concrete, plywood, fiberglass, steel, aluminum, paper, etc. You can build up walls in layers of different materials: fireproof, insulated, decorative and washable for the inside surfaces; weather-resistant for the outside (Langerwiesche, 1972).

Prebuilt Homes Have and Are Being Tried

Prefabrication is not a new development in this country. As early as 1624, the English brought a panelized house of wood to Cape Ann for use by a fishing fleet, and the house was subsequently disassembled, moved, and reassembled many times. Throughout the earlier years of our history, new settlements provided a market for early prefabricators--the California Gold Rush of 1849 was a particularly lucrative market. Also, the Union Army in the Civil War used many prefabricated houses in its camps. In fact, railroad freight rates for wooden portable houses date from around 1870 (Battelle Memorial Institute, 1967).

Early in this century the "mail order house" became popular on the frontiers. Sears, Roebuck Company claims it sold 110,000 houses in 40 years. This was usually a precut house, but the production of these houses was important since it pioneered techniques for the production lines, standardization, and price packaging in the home manufacturing industry (Battelle Memorial Institute, 1967).

Early Scientists and Architects Paved the Way for Prebuilts

In a letter now at the Edison Library Archives, addressed to Messrs. Hulsenkamp and Cranford of Ft. Meyers, Florida, Thomas A. Edison tells of his plans for four prebuilt buildings. "We will erect two dwellings for workmen on the other side of the street. ... Our buildings are being made in Maine and will be loaded aboard ship at Boston."

According to Josephson (1959), Thomas A. Edison's patent No. 1,123,261 (December 22, 1908) specified a complete system of cast iron molds into which a cement house could be poured. The scheme, which cost Edison about $100,000, failed to win acceptance, and he dropped it.

The prebuilt industry actually began developing its present-day characteristics around 1930. With the establishment of FHA, it became possible to market homes in a mass volume in normal peace time. Buyers were able to buy homes on terms they could afford, and the industrialization of housing became a challenge to our economy. Also, the

influence of Frederic Taylor and his principles of scientific management were undoubtedly instrumental in development of industralized housing (Battelle Memorial Institute, 1967).

The most exhaustive study of the problem of reducing construction costs were made by Albert Bemis and Associates of Boston, Massachusetts. The results of this study were printed in Volume III of the "Evolving House" published during the three-year period of 1933 to 1936. In the volume entitled "Rational Design", Bemis suggests a typical module as the basis for design and developed a method for establishing standard assembly details and a simplified drafting technique in which all dimensions are referred to a modular grid.

Regarding housing, Bemis stated, "The reorganization that housing needs--and the redesign of structure here presented--is not a change of process. It does not suggest merely transferring to the shop what was previously done in the field. The parts of the house must be given the new forms and features required for versatility of design, economical mass production and ready-field erection." Albert Bemis died in 1936 and his heirs, wishing to see his work continued, organized the Modular Service Association to continue research in the field of modular standards. As a result of this effort, the American Standards Association initiated a project for the coordination of dimensions of building materials and equipment (Battelle Memorial Institute, 1967).

During World War II, prefabricated housing was used at defense installations. In the late 1940's and early 1950's the Lustron

Corporation set itself up to produce 100 single family homes a day, using industrial methods. Lustron sold 2,000 of these homes, and then went bankrupt due to its under-capitalization, its failure to establish an effective nationwide marketing and distribution network, and the company's inability to produce homes at a price below those built conventionally (Pearson, 1972).

Blake, an architect (1975), states that many inventive designers and architects, such as Walter Gropius, LeCorbusier and other architects of the so-called International Style--between the two wars--were literally obsessed with the idea of some sort of modular building system. Some architects since World War II have been very creative, such as Buchminster Fuller and his "geodesic dome", and Moshe Safdie, the builder of "Habitat" in Montreal.

Operation Breakthrough

In May of 1969, Secretary George Romney of the Department of Housing and Urban Development, announced "Operation Breakthrough." It was termed a program to develop, test, and promote the best in volume produced housing systems. These systems sought to utilize advanced building materials and construction techniques, combined with effective methods of management, marketing, financing and land use. The basic program objective was to establish total housing systems as a force in the building of homes and better communities for Americans of all incomes. As such, the program was intended to help meet the housing shortage, while contributing to an improved living environment.

Operation Breakthrough attacked two problems: producing volume housing and finding markets for it. It is this latter task--the gathering of markets and the elimination of constraints--which is an especially critical one. For there must be consumers ready to buy the houses steadily being produced to justify large investments in plant, equipment, and management organization by prebuilt companies.

The Department of Housing and Urban Development (HUD, 1970), through Operation Breakthrough, funded the design of 22 complete housing systems suitable for constructing residential housing. These housing systems were selected by HUD from among 236 proposals submitted by private industry in response to a formal invitation of HUD in June, 1969. The designing was to be completed by August 1970.

In the next phase of the program, over 3,000 prototype housing units of the 22 housing systems were to be constructed on 11 sites in 10 states across the nation. A variety of housing systems would be displayed at each site. Every housing type, from high rise constuction to single family detached, were included on the sites as suited the topography, location and other characteristics. Preparatory site work began in the summer of 1971 and the construction of housing units followed (HUD, 1970).

The prototype developments were intended as a visual demonstration of the capabilities of each housing system. In addition, the housing systems were tested at the sites as a part of an overall Breakthrough testing evaluation, and certification program. The

developments were also expected to illustrate the best in site planning concepts for better living environments.

Those producers that were chosen by HUD were:

Aluminum Company of America (ALCOA)	Pittsburgh, Pa.
Ball Brothers Research Corporation	Boulder, Colorado
Henry C. Beck Company	Atlanta, Georgia
Boise-Cascade Corporation	Boise, Idaho
Christiana Western Structures, Inc.	Los Angeles, Calif.
Forest City Enterprises, Inc.	Cleveland, Ohio
Descon/Concordia	Montreal, Quebec
General Electric Company	Philadelphia, Pa.
Hercules, Inc.	Wilmington, Delaware
Home Building Corporation	Sedalia, Missouri
Keene Corporation	New York, N.Y.
Levitt Technology Corporation	Lake Success, N.Y.
Material Systems Corporation	Valley Center, Calif.
Module Communites, Inc.	Yonkers, N.Y.
National Homes Corporation	Lafayette, Indiana
Pemtom, Inc.	Bloomington, Minnesota
Republic Steel Corporation	Youngstown, Ohio
Rouse-Wates	Columbia, Maryland
Scholz Homes, Inc.	Toledo, Ohio
Shelley Systems, Inc.	San Jaun, P.R.
Stirling Homex Corporation	Avon, New York
TRW Systems Group	Redondo Beach, California

The location of developments are:

Jersey City, New Jersey

Memphis, Tennessee

St. Louis, Missouri

King County, Washington

Macon, Georgia

New Castle County, Delaware (discontinued)

Harris County, Texas (discontinued)

Seattle, Washington

Kalamazoo, Michigan

Indianapolis, Indiana

Sacramento, California

(HUD, June 1970, p. 9-11)

The tested and demonstrated Operation Breakthrough housing systems were quickly introduced into the housing market. To expedite this process, volume markets were identified and developed before the houses were ready. These markets included conventionally financed housing for low and moderate income families. Also, significant constrains on large scale housing production and marketing, such as diversified local building codes, restrictive land use regulations, and rigid labor requirements, were to be removed. The market aggregation process and some of the more advanced systems were marketed in 1970 (HUD, 1970).

Each of the selected firms were under contract with HUD to complete and perfect the development of its housing system. Some systems required very little new development to be ready. They

were already being marketed in the United States with excellent results, both in terms of consumer acceptance and durability of construction. Some of these were based on systems which were successful in Europe. The necessary research and development costs were paid for by the federal government. This work was closely monitored by HUD housing experts (Feedback, 1976).

Although the completed housing units were rented or sold, their costs exceeded the normal costs of those systems in full production. This was because of the prototype nature of the developments and because each producer was assigned only a relatively small number of units on each site. Economies of scale could not be achieved in this situation. HUD financed the extra cost.

HUD Assesses Operation Breakthrough

HUD's assessment of the outcome of Operation Breakthrough is as follows:

> Breakthrough was complex, involving a totally atypical team approach for planning, development and decision-making, and a range of objectives which simultaneously sought housing and planning innovations, quality, cost savings, speed, participation of minority groups in training and construction, and extensive local participation of citizens and organizations.
>
> An extensive survey of the opinions of Breakthrough residents was conducted, providing significant and valuable insight for future planning efforts, as well as an evaluation tool. The survey verified the achievement of many of the original Breakthrough objectives. For example:
>
> * The relative cost of the housing was cited as the principle reason for moving to the sites.

* Most respondents believed their residential environments would be the same, if not better, in five years.

* Most occupants planned long-term tenure.

* Favorable evaluation was given to the dwelling units themselves.

* Occupants were aware of both the industrialized nature and their federal sponsorship.

* Economic, social, and community factors were highly rated on the sites.

* Over 90% of the residents indicated overall satisfaction with both the dwellings and the sites.

(Feedback, 1976, p. 175-79)

Developments Since Operation Breakthrough

There were differing views from outside Operation Breakthrough. These views came from architects, on-site contractors, unions, consumers, and businessmen. Campbell (1972) pointed a finger at the government for failures in the industry. He said, "It goes back to April 1969 when Secretary George Romney announced Operation Breakthrough. This seemed to say two things: first, that the federal government was going to stimulate production of industrialized housing; and second, that there was an implied promise of government funding on a scale never before attempted in this country."

Failure came because of the realities of modular production are very different from the concept. Too many companies--partly because of Breakthrough and partly because of "very, very muddy thinking"--assumed that you could build housing units by the yard,

so to speak, and turn them out like gypsum board or plywood, or any other industrial commodity. Like a factory button could be pushed and out would come complete housing units, and they would be sold like automobiles. That was the wrong analogy (Campbell, 1972).

A recent large scale venture in prebuilt housing was undertaken by the State of West Virginia. In 1973, West Virginia's low income housing situation was a microcosm of the national housing dilemma (Cobb, 1977). The Mountain State had more than 80,000 families whose income would not allow them to purchase a house through conventional financing. Under the leadership of Joseph H. Mills, SEOO Director and Commissioner of Labor, the Economic Opportunity Office developed the "Housing of Mountaineer Efforts (HOMES) plan, which called for the establishment of five housing corporations that would build housing factories to produce economy housing for low income families. To put the plan into operation, the SEOO obtained funds from the Federal Community Services Administration (formerly the Office of Economic Opportunity).

Five factories were set up. Each was obtained and renovated by local people. One factory was a converted school, one was formerly a winery, one a Navy warehouse, and one a 4-H camp. All the buildings are functional and have large working areas and efficient assembly line layout. The quality of materials used is excellent (Cobb, 1977).

Each factory has only two professionals, a director and a marketing specialist. The director oversees the total work of the factory.

The marketing specialist guides the client through the process of buying a house from the moment of the first contact until the client is in his or her home. A plant foreman directs the construction operations within the plant and at the job site. His crew consists of 8 to 12 local, formerly unemployed men. Each factory is capable of producing more than 75 houses annually. Since spring of 1976, five factories have been in operation, and over 100 houses have been sold. Every factory has a waiting list of people who want to purchase a house. West Virginia believes it has faced its housing problems for low income families and has a head start on resolving them (Cobb, 1977).

Why Develop Prebuilt Homes

A study by Harvard-MIT Joint Center found that as of 1975, only 25% of all American families could afford to buy an existing home. By contrast, about half of all families could afford either type of standard home in 1970. The study's picture of the future is even bleaker. It estimates that by the early 1980's, the average selling price for a standard new home could leapfrog to as much as $78,000 (Daniel, 1977).

It is feasible that the cost of a house could be reduced by the factory production method. LeFrak (1972) told a Pratt Institute audience, "We're going to cut costs through mass purchasing power, greater productivity, and by sub-assembling components and whole rooms, so that main assembly lines can move along as briskly as the ones in Dearborn or River Rouge. We're going to produce

continuously, rain or shine, and if weather shuts down sitework, we're going to stack our product in protected staging areas from which it can be moved swiftly and efficiently when sitework starts up again. We're going to reduce or eliminate one of the greatest costs in construction today--on-site vandalism and theft."

Is the prebuilt house cheaper than the "stick-built"? In 1972 they were about the same. But stick-builders are to a point where there is little room for improvement or economy in their production. By contrast, the industrialized housing industry is in its infancy. Mechanization has only just begun. Production is still small. All the real economies are yet to come (Langewiesche, 1972).

Length of construction period also increases the cost. Average building construction costs have increased 9.6% for the United States as a whole from 1976 to 1977. Housing construction costs in the Pacific Coast and Rocky Mountain States increased 12.1% between September 1976 and September 1977 (Architectual Record, 1978). The longer the construction period, the more acute the inflationary impact.

Factory construction of homes may be the answer. It uses construction skills less wastefully. It allows the industry to double the production without doubling the need for skilled labor. The factories are unionized so the unions are not resisting the change (Langewiesche, 1972).

Skilled labor, and the increasing shortages of it, is one of the principal reasons why prebuilt housing needs top priority. We are dealing with an aging labor force. Each year more skilled craftsmen

leave the building trades than enter them through apprenticeship programs. Those that remain seek and get outrageous increases in wage rates and fringer benefits with each new contract--and with no increase in productivity (Lefrak, 1972).

A solution to the problem is to take semi-skilled workers, even unskilled workers--minorities and underprivileged, and train them to produce housing on an assembly line. They will produce it all year around, 24 hours a day in three eight-hour shifts. The building trades will enjoy something they never had--a guaranteed annual wage (Lefrak, 1972).

A plus feature of prebuilt homes is their rapid production. Rapid production helps curb building costs attributed to inflation. Rapid production will have to be used to meet the demand for housing by our increasing population (Carreiro, 1970).

How Prebuilt Homes are Made

Industrialized housing makes modules. These are three-dimensional units built to satisfy local building codes. Finished in the factory, and bolted together on the site, they may be joined together in varying combinations to create not only homes, but also apartments, offices, and stores. Erection is a matter of connecting the modules together on a foundation and hooking them up to utilities. Industrialized housing facilitates the use of new materials. Indoor work permits the use of heavy machinery and power tools. Metalworking machinery, too immobile for outdoor use, is readily employed in a factory (Pearson, 1972).

A modular assembly line consists of a central assembly line with bays or "work stations" arranged along the central line. The floor is built at the first station, and walls, ceiling, roofs, plumbing, wiring, kitchen systems, doors, trim, and tile or carpet are added at successive substations. Benefitting from sophisticated tooling and fixtures, the modules proceed through their sequential work stations to emerge at the end of the line as finished products.

The kitchen cabinets and other fixtures, including formica counters, sinks, tubs, baths and showers, are factory installed. Exterior windows and doors, asphalt roof shingles, and siding materials are factory installed over insulated walls. Major appliances, including range, oven, and refrigerator, may also be included in the factory installation. From 90 to 95% of the finishing work is done in the factory.

Problems of the Prebuilt Housing Industry

There cannot be any true prefabrication of building components unless and until the nation's building industry agrees to rigorously adhere to a set of dimensional and qualitative standards. The tendency is for each manufacturer to establish standards that will be as different as possible from those of all his competitors. A manufacturer of kitchen appliances, for example, makes a point of scaling and coloring his wares so that they cannot be easily be used in conjunction with those of another manufacturer (Blake, 1975).

Material deliveries may not be on time, and production lines may consequently be held up. Or the prebuilt house factory may not have any orders for a period of time. In stick building, if they have no orders they close down and go to Florida for the winter. In a factory, if work is stopped, most of the overhead costs still continue.

The constraint of a multitude of different building codes has not been resolved by the adoption of a national building code. To overcome this problem, prebuilt companies have building inspectors in the plants. They make sure each house will meet the building code of the area where it will go, and the codes of the lending institution that will loan the money on it (Allen, 1978).

Section 809 of the Housing and Community Development Act of 1974 creates the National Institute of Building Sciences. It is charged with developing methods for encouraging all sectors of the economy to accept and use nationally recognized performance criteria and standards. The United States will be subject to massive revision for metrication. This will provide a never-to-be-repeated opportunity to create a new system of codes and regulations expressed in performance terms (Rassias, 1977).

Mass production of large building components can occur only where there is mass consumption--that is, a smooth and even flow of distribution. This means that dealerships must be set up around the country so that the manufacturing plant can be assured of a steady demand.

Prebuilt companies are overcoming their distribution difficulties. In the field, salesmen with a distributorship sell the prebuilt homes. Businessmen, realtors, contractors, material suppliers, and others are the distributors. The local real estate broker, like the builder, has his finger on the pulse of the local situation. He knows the local market. He knows his local planning commission, from whom approvals of his developments must be obtained. He knows his local zoning board, from whom use variances and exceptions to building codes must be secured. He knows building construction. He can hire the crane to set the units on site, and he can arrange for the hook-ups with the local utilities (Pearson, 1972).

Highway regulations limit the width, length, height, and weight of loads. Most states limit modular widths to under 13 feet. Modular designers are, therefore, required to draw their structures within fairly conservative width and height limitations.

Truck transportation is generally restricted to 300 to 350 miles of the plant itself. This means that a number of plants must be set up to serve separate marketing areas, rather than having one large plant serve a wide area.

Some states will not allow oversize loads to be hauled a certain distance beyond a primary road. This creates geographical pockets into which modulars may not go. The only consistent highway regulation from state to state requires that a special highway use permit be obtained for units exceeding eight feet in width (Pearson, 1972).

Dealers and their companies must pay a lot of attention to logistics--weather and transportation details. Once the modules leave the plant, they are vulnerable to weather. The prebuilt company is responsible for the home until it is placed and ready to occupy (Olsen, 1978).

When completed, the dealer, consumer, and sometimes a representative of the loaning institution inspect the house. They look for quality in workmanship and materials. They also check to see if the house is as the plans indicated. With the final approval, the consumer may move into the home. The house carries a one-year guarantee. Any complaints should go to the dealer. He will then call for a repair team from the prebuilt company or retain a local workman to do the repairs (Robbins, 1978).

Marketing Problems

Prebuilt companies and their dealers must gather, compile, and analyze sales, population, and financing data. They must identify a potential market and then build to satisfy home buyers in that market (Campbell, 1972).

But the major problem is obtaining public acceptance. The public confuses modulars with mobiles. The public equates prefabrication with cheap and shoddy public housing. The very expression "Industrialized housing" suggests standardization and spiritual sterility (Pearson, 1972).

According to Pearson (1972), producers must show the public that industrialized housing not only can be of high quality, but also can be aesthetically pleasing. Prebuilt designers must take the drabness out of manufactured homes. Architectural aesthetics must be employed to get away from a factory-built label, just as different exteriors and modifications to interiors are used by on-site builders to eliminate the stigma of a tract home.

Financing the Home

In order for most consumers to buy houses, they must have outside financing. In general, prebuilt companies do not provide this, but the availability of loan money in the area is of prime concern to the prebuilt housing company.

Savings and loan companies. Savings and loan companies will lend 80% of the value of the prebuilt house at 10-3/4% interest on first mortgages. There is no limit to the amount. Persons applying for mortgages must have good credit rating. The buyer must have 20% as down payment. The savings and loan companies will review the plans and appraise the total value of which they will loan 80%. Interest percentages quoted were as of February 8, 1979. The interest rate on March 10, 1978, was 9½% (Holland, 1979).

The Farmers Home Administration (FmHA). A government institution located in each county, FmHA, as of January 1, 1979, would lend up to $40,000 to those whose adjusted income is under $16,500. They must have a good credit rating. To figure the adjusted yearly income,

the gross yearly income is used as the basis. Then 5% of the gross income and $300 for each child living at home is deducted from the gross income. If the total is less than $10,000 adjusted yearly income, and the family's net worth does not exceed $5,000, they are eligible for government assistance, also. The government will assist them with their interest payments by lowering their interest rate from 8-3/4% down to 1%, depending on what their yearly adjusted income is. Their income and adjusted interest rate is reviewed every two years and the interest rate is adjusted accordingly. On March 1, 1978, the loan amount was $35,000 and unadjusted interest rate was 8% (Gardner, 1978).

FmHA will permit no sliding glass doors, no carpet in kitchen or bath, only one bath on the main floor, no fireplace, no roughed-in foundation for fireplaces, no garage, and no carports. The $40,000 maximum loan includes the price of the lot. If the lot sells for $9,000, then the maximum the house could cost is $31,000. This would be the full finished price, including foundation or basement, carpeting, utilities hookups, etc. (U.S. Dept. of Agriculture, 1977).

FmHA loans are available in any town, village, city, or place, including the immediately adjacent densely settled area, which is not part of or associated with an urban area, and (1) has a population not in excess of 10,000, if it is rural in character; or (2) has population in excess of 10,000 but not in excess of 20,000; and (a) is not contained within a Standard Metropolitan Statistical Area (SMSA); and (b) has a serious lack of mortgage credit for low and moderate income families as determined by the Secretary of Agriculture and

the Secretary of Housing and Urban Development. Water and sanitation systems in the area must also meet FmHA requirements (U.S. Dept. of Agriculture, 1977).

Federal Housing Administration. The FHA does not build houses or lend money. It acts only as an insurer of privately made loans from approved lenders. FHA will insure 97% on the first $25,000 and 95% on the second $25,000 (Berston, 1977). The interest rate as of February 22, 1978, was 8½%. The interest rate on February 8, 1979, had gone up to 9½%, and the seller must assume the points. Points being charged in February 1978 were 6, which would be 6% of the total loan. On February 8, 1979, the points being charged were 5½ to 6. A ½% is added to the interest rate to cover repayment insurance (Darley, 1979).

Veterans Administration loans. The VA may guarantee a home loan made by a private lender up to $100,000. The interest rate on loans made or guaranteed by the VA are 9½%. Home loans can be made for a maximum of 30 years (Bower, 1979).

Conventional loans. Fully amortized conventional loans on real estate made by all national and state chartered banks are generally limited to 80% of the bank's appraisal of the value of the property or the selling price, whichever is lower (Berston, 1977). The interest rate was 10-3/4% at the Tremonton Branch Bank of First Security Bank of Utah on February 8, 1979. The interest rate on February 22, 1978 was 9½% (Darly, 1979).

Summary

Prebuilt housing has been tried since the time of the early settlers. Many different system designs have been built, tested, and marketed. Not all prebuilt housing companies have been successful.

Prebuilt housing could lower building costs and the rapid production would help curb the rising need by an ever increasing population for housing. Rapid production holds down inflationary building costs.

Producers have had to develop new solutions to a wide range of problems--labor, materials, methods of assembly, building codes, transportation, and the development of a high quality product. But their major problem is obtaining public acceptance.

The major marketing problem is to create an acceptable image in the mind of the consuming public. The public thinks of modulars as standardized boxes. Better terminology might be used, such as "precision-engineered homes" instead of "prebuilts" or "prefabs."

It is clear from the search of the literature that there has been little investigation on consumer satisfaction or dissatisfaction. Nor has there been an evaluation on where a prebuilt housing market might be, and what kind of design would be acceptable to that market.

CHAPTER III

METHOD OF PROCEDURE

This study is of a survey design. It was done in order to ascertain the reasons that consumers buy prebuilt houses, and their satisfaction with those houses.

Sample

The subjects for the study were 60 husbands and their wives who had purchased prebuilt houses. They were asked to respond to a questionnaire about themselves, their family, and the prebuilt house in which they lived. Questionnaires were filled out only by those couples who had originally ordered their prebuilt house.

The total sample was taken in Box Elder County, Utah, and was stratified in this manner: 15 couples in Brigham City, 5 couples in Perry, 5 couples in Honeyville, 2 couples in Elwood, 15 couples in Tremonton, 5 couples in Bothwell, 8 couples in Garland, and 5 couples in Riverside, Utah.

The selection of subjects was made using incorporated municipalities records for Garland, Tremonton and Brigham City and Box Elder County building permits. The logs of Merrill Johnson (building inspector for Tremonton and Deweyville, Utah) and Denton Beecher (County Building Inspector) were used. Also, the records of dealers of prebuilt homes in Box Elder County were used.

Instrument

The data collection instrument was a two-part questionnaire and interview (see Appendix). Part 1 of the instrument was a questionnaire filled out by the subjects described in the sample. The questionnaire gathered background data about the prebuilt house the subjects lived in, and socio-economic data about themselves and family.

Part 2 of the instrument was a questionnaire filled out by the subjects described in the sample. This questionnaire was based on a Likert scale, testing prebuilt homeowners satisfaction or dissatisfaction with their homes in the areas of design, quality of construction, and the alternative housing choices that were available to the subjects before they purchased their home. While responding to Part 2, the husband and wife did not confer about their feelings of satisfaction or dissatisfaction with their home.

In those areas scored unsatisfactory in Part 2 of the questionnaire, the homeowners were asked by the researcher to be more specific about their dissatisfaction. The researcher conducted an indepth interview with the homeowners as to why they were dissatisfied, where the homeowners thought the problem was, and what the homeowners thought the solution to this problem could be.

As a pretest, the instrument was administered to five married couples who own prebuilt houses in Northern Box Elder County. An appropriate analysis of the data was made. It was found that the instrument needed no modifications.

Collection of Data

The researcher telephoned or called personally upon the subjects to make an appointment to administer the questionnaires at their home. The data were collected during the month of October, 1978. The same researcher administered the instrument to all of the subjects in the sample.

Analysis of Data

Responses to the questionnaires were grouped into these areas for analysis: design, prebuilt house construction, financing, price, characteristics of the typical prebuilt houseowners, characteristics of a typical prebuilt house, and availability of other alternatives of housing.

A statistical analysis of the study data includes percentages for all multiple criteria variables, such as the percentages of couples with yearly incomes of $10,000 to $14,999.

The mean was used to express the most likely variable among the related variables. Chi square was used to assess relationships, such as the relationship of the wives' or husbands' overall satisfaction with the house as compared to their satisfaction with the construction of the house.

CHAPTER IV

RESULTS

This research was concerned with the reasons why consumers buy prebuilt houses and their satisfaction with those houses. Additionally, it was concerned with making recommendations, based on participants' comments, to help make prebuilt housing a viable alternative in all areas of the housing market.

Description of Sample

Sixty husbands and their wives who had purchased prebuilt houses were questioned. Questionnaires were filled out by only those couples who had originally ordered their prebuilt home.

The total sample was taken in Box Elder County, Utah, and was stratified in this manner: 15 couples in Brigham City, 5 couples in Perry, 5 couples in Honeyville, 2 couples in Elwood, 15 couples in Tremonton, 5 couples in Bothwell, 8 couples in Garland, and 5 couples in Riverside, Utah.

Demographic Analysis

An analysis of the background of the owners of prebuilt homes who served as subjects in this research was made (see Table 1). The age span of the respondents was from under 20 years to over 60 years, with the average age of both the husbands and wives being 26 to 30 years old.

Table 1

Ages of Husbands and Wives

Years of Age	Husbands		Wives	
	Number	Percent	Number	Percent
Under 20	1	1.7	1	1.7
20 - 25	10	16.1	16	27.7
26 - 30	21	35.0	20	33.3
31 - 40	16	26.7	12	20.0
41 - 50	4	6.7	5	8.3
50 and over	8	13.3	6	10.0
	60	100.0	60	100.0

The data in Table 2 indicates the educational level of the respondents. The category for the husbands with the highest frequency was those who had attended college, while college graduate had next to the highest frequency. The category for the wives receiving the highest frequency was high school graduate, while those who had attended college was the next to the highest in frequency.

An analysis of occupations (Table 3) identifies that the highest frequency of occupation for the husbands was in the white collar category (50.0%). This would seem to hold true with the findings in Table 2 that the highest frequency of husbands had attended or graduated from college. The highest frequency of occupation for the wives was in the housewife category (61.7%). The occupations were grouped into

Table 2

Husbands and Wives Educational Level

Education Level	Husbands		Wives	
	Number	Percent	Number	Percent
Not responding	1	1.7	0	0.0
Grade school	1	1.7	0	0.0
Attended high school	3	5.0	4	6.7
High school graduate	12	20.0	22	36.6
Attended college	19	31.7	20	33.3
College graduate	14	23.3	7	11.7
Trade School	10	16.7	7	11.7
	60	100.0	60	100.0

Table 3

Occupation of Homeowners

Category Occupation	Husbands		Wives	
	Number	Percent	Number	Percent
1. White collar	30	50.0		
2. Blue collar	20	33.3		
3. Housewife			37	61.7
4. Farmer	3	5.0		
5. Retired	5	8.3		
6. White collar/part-time job	1	1.7	6	10.0
7. Blue collar/part-time job	1	1.7	2	3.3
8. Housewife/part-time job			14	23.3
9. Farm/part-time job			1	1.7
	60	100.0	60	100.0

nine categories as listed by the U.S. Dept. of Labor (Employment and Earnings, 1978). Group 1 was white collar workers, and included professionals, technicians, managers, officials, proprietors, clerical and salespersons. Group 2 was blue collar workers made up of craftsmen, foremen, operatives, those involved in transportation, and nonfarm laborers. Group 3 was full time housewives. Group 4 were those involved with farming, such as farmers, farm managers, farm laborers, and foremen. Group 5 was made up of retired people.

The total family income reported by the respondents (Table 4) in this study ranged from $5,000 to over $25,000. The category receiving the highest frequency was from $10,000 to $15,000, and the next highest frequency being in the $15,000 to $20,000 category.

A tabulation of the number of children living at home (Table 5) shows six families with no children living at home, and one family had six children at home. The average number of children living at home was two.

Analysis of Houses

An analysis of the characteristics of the houses used in this research study was made. The characteristics researched were: main floor square footage, length of time house had been occupied, exterior materials used on house, and the loaning institution from which the house mortgage was procured.

The size of the house was determined by the square footage on the main floor (Table 6). The size ranged from under 1,000 square feet

Table 4

Family Income

Category Income	Number in Category	Percent in Category
1. Not responding	3	5.0
2. Below $5,000/year	0	0.0
3. $5,000 to $9,999	3	5.0
4. $10,000 to $14,999	23	38.3
5. $15,000 to $19,999	20	33.3
6. $20,000 to $24,999	7	11.7
7. $25,000 and over	4	6.7
	60	100.0

Table 5

Children Living at Home

Number of Children	Families Having This Number of Children Living at Home
0	6
1	15
2	20
3	11
4	2
5	5
6	1
128	60

Table 6

Square Footage of Floor Space

on the Main Floor

Square Footage On Main Floor	Number in Category	Percentage
700 - 999	6	10.0
1,000 - 1,199	31	51.7
1,200 - 1,699	22	36.7
1,700 and Over	1	1.7
	60	100.0

to over 1,700 square feet. The most frequent size of house was between 1,000 and 1,199 square feet (51.7%). This may have been influenced by the fact that Farmers Home Administration loans are made on houses under 1,200 square feet.

The average length of time the houses had been occupied was two and one-half years (Table 7). Only 18 out of the 60 houses were more than four years old. The lack of homes older than four years in the sample could be attributed to the unpopularity of prebuilt homes in the past, or the fact that the average mortgage is held for seven years. If the average mortgage lasts only seven years, then these homeowners must be moving about every seven years. This would diminish the number of older homes still held by the original owners. Original owners of prebuilt homes were used in this study. Also, population growth has increased the demand for homes in the last few years.

Table 7

Length of Time the Owners

Had Occupied the House

Length of Occupancy	Number of Houses Occupied	Percent
6 months	9	15.1
1 year	14	23.4
2 years	11	18.3
3 years	12	20.1
4 years	4	6.7
5 years	4	6.7
6 years	4	6.7
7 years	1	1.7
8 years	1	1.7
	60	100.0

Houses can be ordered from the manufacturer with a variety of exterior materials (Table 8). The cost of these materials and their installation range from the lowest price for painted wood siding to the highest price for brick. The painted wood category had the highest frequency of responses (71.7%).

The types of lending institutions homeowners used to obtain their mortgage indicates that the highest frequency of mortgages were from Farmers Home Administration (Table 9). This loan is provided from the Department of Agriculture through the Farmers

Table 8

Exterior Materials

Type of Exterior Material	Number of Houses	Percent
Painted wood	43	71.7
Stained wood	8	13.3
Brick	3	5.0
Stucco	0	0.0
Metal siding	0	0.0
Other	3	5.0
Combination of materials	3	5.0
	60	100.0

Table 9

Types of Lending Institutions

Used by Homeowners

Financial Institution	No. of Homeowners Using this Institution	Percent
Conventional loan with a bank	13	21.7
Federal Housing Administration	6	10.0
Farmers Home Administration	23	38.3
Savings and Loan companies	9	15.0
Other types of loans	9	15.0
	60	100.0

Home Administration to low income families. These families do not have to be farmers or live on a farm, but the area in which these loans are granted must be of a rural nature. Indeed, only three responsents gave farming as their occupation (Table 3), whereas 23 homes had Farmers Home Administration mortgages.

Objective No. 1

Objective No. 1 was to determine the reasons why consumers buy prebuilt homes. Hypothesis No. 1 related to Objective No. 1, which stated that there is no significant difference within the husband group or within the wife group as to the reasons why the prebuilt homes were purchased.

An even distribution of reasons for buying a prebuilt house was not found in the population sampled (Table 10). Price had the highest frequency of response in the husbands' category (38.3%). Length of time needed to get the house had the highest frequency for the wives (26.7%). Over 50% of both husbands and wives indicated that either price or length of time needed to get the house was the determining reason for purchasing a prebuilt house. In analysis of rising building and labor costs, the length of time needed to obtain a house could be related to price.

The data permitted the rejection of Hypothesis No. 1 that the considerations for buying are evenly distributed in the husband or wife category according to chi square and goodness of fit for one-variable problems. Data used to calculate chi square are found in Table 10.

Table 10

Consumers' Reasons for Purchasing

A Prebuilt House

Reasons for Purchase	Husbands Number	Husbands Percent	Wives Number	Wives Percent
Price	23	38.3	15	25.0
Length of time needed to get the house	11	18.3	16	26.7
Quality of construction	7	11.7	2	3.3
Floor plan and design	4	6.7	6	10.0
Financing available	10	16.7	10	16.7
Other reasons	5	8.4	11	18.3
	60	100.0	60	100.0

Husbands df-5 Chi square = 24.72 Wives df = 5 Chi Square = 42.44

Hypothesis No. 2 relates to objective No. 1. Objective No. 2 was to determine why people buy prebuilt homes. Hypothesis No. 2 stated that there is no significant relationship between main floor square footage and the type of financial institution from which the mortgage was obtained on the prebuilt home.

The data in Table 11 did not permit the rejection of this hypothesis by the use of the chi square test for two-variable problems at the .05 level of significance.

Hypothesis No. 4 further evaluates consumers' reasons for buying. Hypothesis No. 4 states that there is no significant difference between husbands' and wives' reasons for buying a prebuilt home.

Table 11

Type of Institution the Mortgage was Obtained From Compared with the Square Footage of the House

Loaning Institution	Square Footages on Main Floor 700-900	1,000-1,199	1,200-1,699	1,700- and Over	Total
Conventional bank	0	5	8	0	13
Federal Housing Admin.	0	4	2	0	6
Farmers Home Admin.	5	14	4	0	23
Savings and loan	1	4	4	0	9
Other types of loans	0	4	4	1	9
	6	31	22	1	60

df = 12 Chi square = 17.745

The chi square test for two-variable problems was used for analysis. This hypothesis was rejected at the .05 level of significance (Table 12). The majority of husbands cited price as their reason, and the majority of wives cited the length of time needed to obtain the house as their reason.

Objective No. 2

Objective No. 2 was to determine the satisfaction of the owners of a prebuilt home with their home. Hypotheses No. 3 and 5 related to this objective. Hypothesis No. 3 stated that there is no significant difference between prebuilt homeowners' overall satisfaction with their home and their satisfaction with the construction of the house.

Table 12

Husbands' Reasons for Purchasing the Prebuilt House Compared with the Wives' Reasons

Reasons for Purchase	Husbands Number	Husbands Percent	Wives Number	Wives Percent
Price	23	28.3	15	25.0
Length of time needed to get the house	11	18.3	16	26.7
Quality of construction	7	11.7	2	3.3
Floor plan and design	4	6.7	6	10.0
Financing available	10	16.7	10	16.7
Other reasons	5	8.4	11	18.3
	60	100.0	60	100.0

Df=36 Chi square = 70.27

The data in Tables 15 and 16 permits the rejection of this hypothesis for both husbands and wives.

Hypothesis No. 5 stated that there is no significant difference between the husbands' overall satisfaction with the house and the wives' overall satisfaction. The data given in Table 17 permits the rejection of this hypothesis at the .05 level of significance.

An analysis of the satisfaction of husbands and wives with the workmanship of their homes (Table 13) indicates that the highest frequencies (31.7%) are in the average and good categories for the husbands. The highest frequency (36.7%) is in the good category for the wives.

Table 13

Husbands' and Wives' Satisfaction with the Workmanship of their Home

Satisfaction	Husbands		Wives	
	Number	Percent	Number	Percent
No response	0	0.0	1	1.7
Unsatisfactory	2	3.3	4	6.7
Fair	10	16.7	10	16.7
Average	19	31.7	13	21.7
Good	19	31.7	22	36.7
Very satisfactory	10	16.7	10	16.7
	60	100.0	60	100.0

Table 14

Husbands' and Wives' Overall Satisfaction

Satisfaction	Husbands		Wives	
	Number	Percent	Number	Percent
Unsatisfactory	1	1.7	1	1.7
Fair	4	6.7	5	8.3
Average	14	23.3	7	11.7
Good	25	41.7	28	46.7
Very satisfactory	16	26.7	19	31.7
	60	100.0	60	100.0

Table 15

Husbands' Overall Home Satisfaction Compared

to Workmanship of the Home

Husbands' Overall Satisfaction	Husbands' Satisfaction With Workmanship					
	Unsatis.	Fair	Average	Good	Very Satis.	Total
Unsatisfactory	1	0	0	0	0	1
Fair	0	0	2	2	0	4
Average	0	8	6	0	0	14
Good	1	2	7	11	4	25
Very Satisfactory	0	0	4	6	6	16
	2	10	19	19	10	60

Df = 16 Chi square = 63.10

Table 16

Wives' Overall Satisfaction Compared

to Workmanship of the Home

Wives' Overall Satisfaction	Wives' Satisfaction with Workmanship					
	Unsatis.	Fair	Average	Good	Very Satis.	Total
Unsatisfactory	0	0	0	1	0	1
Fair	2	2	1	0	0	5
Average	0	4	1	2	0	7
Good	3	3	10	9	3	28
Very Satisfactory	0	0	1	10	7	19
	5	4	10	13	22	60

Df = 20 Chi square = 39.28

Further analysis dealing with the husbands' and wives' satisfaction with the total project (Table 14) indicates that the highest frequency for the husbands is in the good category (41.7%). The good category was also the one receiving the highest frequency for the wives (46.7%).

The chi square test for two-variable problems was used to analyze the overall satisfaction the husbands had, compared to his satisfaction with the workmanship of his home (Table 15). The data permitted the rejection of Hypothesis No. 3 at the .05 level of significance. The husbands had a greater satisfaction level with the overall project than they did with the workmanship of the house. This may be attributed to the fact that people are generally more satisfied with the total project than with any specific element of that project.

The chi square test for two-variable problems was used for analysis of the wives' over all satisfaction with the house, as compared to her satisfaction with the workmanship of her home (Table 16). The data permitted the rejection of Hypothesis No. 3 at the .05 level of significance for the wives. Both husbands and wives had a greater level of satisfaction with the overall project than they did with the workmanship of the house.

Hypothesis No. 5 dealt with the difference between the husbands' overall satisfaction and the wives' overall satisfaction with the house. It was hypothesized that their satisfaction would be the same.

The chi square test for two-variable problems was used for analysis. The data in Table 17 permitted the rejection of Hypothesis No. 5 at the .05 level of significance. The wives had a higher percentage in the good and very satisfactory levels than did the husbands (Table 14).

Analysis of Other Influencing Factors

Other factors that influenced the consumer satisfaction with the prebuilt home could have been the actual length of time before moving into the house. Table 18 shows the length of time waited after the contract was signed before the owners could occupy their home. The average wait was five and one-half months for this sample. The highest frequencies were at the three and six months levels. If a three-month wait was anticipated as a satisfactory waiting period, then 55.0% were not realizing this satisfaction. Other types of housing in the area may have had an effect upon the decision to buy a prebuilt home (Table 19). If many units in a variety of different housing types were looked at by the homeowners, a trend toward purchasing prebuilt homes might be established. This does not seem to be the case, because only 50% of the couples in any category were aware of other alternatives in housing in their area.

The owners of prebuilt homes level of satisfaction may be affected by the esteem in which the general public holds prebuilt homes (Table 20). The highest frequency of the general public's satisfaction was assessed as average by both the husbands and wives of this study. It

Table 17

Husbands' Overall Satisfaction Compared With

the Wives' Overall Satisfaction

Husbands Overall Satisfaction	Wives' Overall Satisfaction					
	Unsatis.	Fair	Average	Good	Very Satis.	Total
Unsatisfactory	0	0	1	0	0	1
Fair	0	0	3	1	0	4
Average	0	3	3	7	1	14
Good	1	1	0	14	9	25
Very Satisfactory	0	1	0	6	9	16
	1	5	7	28	19	60

Df = 16 Chi square = 40.813

Table 18

Length of Time Waited Before Occupancy

Months Waited	Number of Houses in Each Category	Percent of Houses in Each Category
No response	2	3.3
1	2	3.3
2	5	8.3
3	18	30.0
4	5	8.3
5	6	10.0
6	12	20.0
7	2	3.3
8	4	6.7
9	3	5.0
10	1	1.7
	60	100.0

Table 19

Other Types of Housing Assessed

Types of Housing Assessed	Number of couples Who Looked At This Type	Percent Aware of This Type	Percent Not Aware of This Type
Rental unit	16	26.7	73.3
Home built to their specification by contractor	26	43.3	56.3
Home already built by contractor on speculation	26	43.3	56.7
Older home for sale	29	48.3	51.7
Mobile home	16	26.7	73.3
Other	2	3.3	96.7

Table 20

Evaluation of Homeowners Regarding the Public Acceptance of Prebuilt Homes

Satisfaction	How husbands think Public Feels		How Wives Think Public Feels	
	Number	Percent	Number	Percent
Not responding	1	1.7	1	1.7
Unsatisfactory	5	8.3	6	10.0
Fair	21	35.0	19	31.7
Average	25	41.7	24	40.0
Good	7	11.7	9	15.0
Very Satisfactory	1	1.7	1	1.7
	60	100.0	60	100.0

will be noted on Table 14 that the average prebuilt homeowner indicated their overall satisfaction was at the good level.

Other external factors in satisfaction with prebuilt houses by their owners is their satisfaction with other houses for sale, or contractors to build a house in Box Elder County area. Tables 21 and 22 show that their satisfaction with sale homes or contractors was fair to average. It could be that their satisfaction level with their prebuilt home was increased, when they compared it to other alternatives. Table 19 indicates that their comparison was not extensive.

When asked if they would purchase another prebuilt home, over 80% of both husbands and wives answered "yes" (Table 23). The wives answered yes 7.7% above the husbands, but the wives generally gave higher satisfaction levels.

Design element satisfaction. The satisfaction of the husbands and wives with the various parts of the design of their prebuilt home was analyzed. Husbands on the average rated the design elements between average and good (Table 24). The wives on the average rated the design elements good, except for the kitchen work area, which they rated average (Table 25). The reader may recall that the respondents generally gave a level of good for their overall satisfaction (Table 14).

Responses Given in the Interview by Owners of Prebuilt Houses

Dissatisfaction with the dealer had the highest frequency of response. Some items that were scored low in satisfaction were

Table 21

Prebuilt Homeowners Satisfaction with the Homes for Sale in the Box Elder County Area

Satisfaction	Husbands		Wives	
	Number	Percent	Number	Percent
Not responding	0	0.0	2	3.3
Unsatisfactory	9	15.0	11	18.3
Fair	17	28.3	17	28.3
Average	23	38.3	18	30.0
Good	11	18.3	9	15.0
Very Satisfactory	0	0.0	3	5.0
	60	100.0	60	100.0

Table 22

Homeowners' Satisfaction with the Availability of Homebuilding Contractors

Satisfaction of Prebuilt Homeowners with Contractors in area	Husbands		Wives	
	Number	Percent	Number	Percent
Not responding	2	3.3	5	8.3
Unsatisfactory	7	11.7	5	8.3
Fair	14	23.3	17	28.3
Average	18	30.0	20	33.3
Good	16	26.7	9	15.0
Very satisfactory	3	5.0	4	6.7
	60	100.0	60	100.0

Table 23

Owners Who Would Buy Another Prebuilt House

Response	Husbands		Wives	
	Number	Percent	Number	Percent
Yes	48	80.0	52	86.7
No	12	20.0	8	13.3

Table 24

Husbands' Satisfaction with the

Different Design Elements

Design Elements	Husbands' Satisfaction									
	Unsatis.		Fair		Average		Good		Very Satis.	
	No.	%	No.	%	No.	%	No.	%	No.	%
Storage	4	6.7	7	11.7	17	28.3	21	35.0	11	18.3
Traffic flow	1	1.7	4	6.7	15	25.0	26	43.3	14	23.3
Room size	0	0.0	7	11.7	28	46.7	18	30.0	7	11.7
Space for furniture arrangement	2	3.3	10	16.7	24	40.0	23	38.3	1	1.7
Kitchen work area space	1	1.7	4	6.7	21	35.0	18	30.0	16	26.7
Arrangement of bathroom	0	0.0	5	8.3	22	36.7	25	41.7	8	13.3

Table 25

Wives' Satisfaction with the

Different Design Elements

Design Elements	Wives' Satisfaction									
	Unsatis.		Fair		Average		Good		Very Satis.	
	No.	%	No.	%	No.	%	No.	%	No.	%
Storage	0	0.0	3	5.0	9	15.0	31	51.7	17	28.3
Traffic flow	0	0.0	5	8.3	19	31.7	25	41.7	11	18.3
Room size	2	3.3	8	13.3	22	36.7	23	38.3	5	8.3
Space for furniture arrangement	1	1.7	4	6.7	9	15.0	24	40.0	22	36.7
Kitchen work area space	0	0.0	6	10.0	21	35.0	19	31.7	14	23.3
Arrangement of bathroom	5	8.4	10	16.7	13	21.7	22	36.7	10	16.7

attributed to poor dealer service. Homeowners felt that the dealer was not interested, that he was slow in reporting repair items to the company, and that he did not make details in the house plans clear.

CHAPTER V

SUMMARY AND DISCUSSION

This study investigated reasons why buyers invest in prebuilt houses, and if reasons prompting that selection are being satisfied. The study measured wife and husband satisfaction independently, and was completed in Box Elder County, Utah, where emergency for housing is not high.

The study may be of interest to potential home buyers, because it analyzes the reasons people have bought prebuilt houses, and their satisfaction with those houses. The study may also be of interest to those who market prebuilt houses, because it supplies information useful in targeting their markets and satisfying their customers.

The basic element of targeting the prospective market of prebuilt home buyers is to find what type of people have purchased this housing, and the features incorporated in the homes purchased.

Summary

Demography. The age group between 26 and 30 years old (for both husband and wife, Table 1) had the highest number of consumers. Of this group, most husbands had attended college and the wives were high school graduates (Table 2). The average number of children was two (Table 5). The average annual income of these families was

between $10,000 and $15,000 (Table 4). In the husband category, white collar occupations were reported the most frequent (50.0%, Table 3). In the wife category, the occupation of housewife was reported by 61.7% (Table 3) of the wives.

Typical house. The size of the typical house was between 1,000 and 1,200 square feet of floor space on the main floor (Table 6). Painted wood siding was the prevalent exterior treatment, with 71.7% (Table 8) of the houses being in this category. The greatest number of home loans were with Farmers Home Administration (Table 9), and the mean length of time the houses had been occupied was two and one-half years (Table 7).

Other housing alternatives. The awareness of homeowners of other alternatives in housing before they bought a prebuilt house was not over 50.0% (Table 19). The satisfaction the owners of prebuilt homes expressed for other homes for sale, or the availability of an on-site contractor in their area was fair to average (Tables 21 and 22).

Objective No. 1. Objective No. 1 was to determine the reasons why these consumers purchased prebuilt homes. Hypotheses Nos. 1, 2, and 4 related to this objective. Hypothesis No. 1 stated that there would be no significant difference within the husband group or within the wife group as to the reasons why the prebuilt houses were purchased. The data permitted the rejection of this hypothesis because the most frequent reason was price (Table 10, 38% for the husbands and 25.0% for the wives). The second most frequent reason was the length of

time before consumers could occupy the house (18.3% for the husbands and 26.7% for the wives). This reason could be related to price, because the more time before the consumer can occupy the house usually means higher construction prices. The third most frequent reason was the financing available (Table 10).

Hypothesis No. 2 stated that there would be no significant relationship between main floor square footage and the type of mortgage obtained on the prebuilt house. The data permitted the retention of this hypothesis (Table 11).

Hypothesis No. 4 stated that there is no significant difference between husbands' reasons for buying and wives' reasons for buying. The data permitted the rejection of this hypothesis (Table 12). The husbands cited price and the wives the length of time needed to obtain the house. However, length of time may be related to price.

Objective No. 2. Objective No. 2 was to determine the satisfaction of the owners of prebuilt homes with their homes. Hypotheses Nos. 3 and 5 related to Objective No. 2. Hypothesis No. 3 stated that there is no significant difference between owners of prebuilt homes overall satisfaction with their home, and their satisfaction with the construction of the home. The data permitted the rejection of this hypothesis for both husbands and wives (Tables 15 and 16). Overall satisfaction was higher with both husbands and wives than their satisfaction with any one specific element of the overall project.

Hypothesis No. 5 stated that there would be no significant difference between the husbands' overall satisfaction and the wives' overall satisfaction with the house. The data permitted the rejection of this hypothesis (Table 17). In general, the wives were more satisfied in every category than the husbands.

Discussion

Companies who manufacture prebuilt homes advertise these homes commercially, but the general public for the most part does not realize what they are selling. They do not know a prebuilt home from a pre-cut home. Their interest has not been stimulated. The potentials or possibilities of prebuilt housing does not seem to reach the general public.

A good mode of advertisement may be testimonials of satisfied owners of prebuilt homes to their neighbors and friends. This study indicated that owners of prebuilt homes perceived that the general public's image of prebuilt homes is only fair to average, whereas the homeowners' satisfaction with their prebuilt house was much higher.

The dealer was the object of most dissatisfaction to some consumers. They said that he did not report conditions in need of repair within a reasonable length of time to the company. There were misunderstandings about the detail work between dealer, or the company and the consumer. The consumers stated that the service the dealer rendered was not worth the price they paid.

The survey information indicated that the three most important reasons for buying a prebuilt house were price, a short waiting period before delivery, and available financing.

Recommendations

Recommendation No. 1. The future of prebuilt housing is in its conservation of time, money, and materials. The company must show the consumer where prebuilt houses are conserving either time, money, materials, or all three for the benefit of the consumer.

A. It must be shown that it is less expensive than stick-built for a structure of near likeness.

B. Dealers and the company must see that the time of delivery is kept to a minimum. The survey shows on the average it is five and one-half months. That is too long, because a stick-built house could be completed in that length of time. Companies should see that dealers attend to problems promptly.

C. The company or the dealer should instruct the consumer concerning what materials were used and their proper care. They should also be instructed concerning the use and care of equipment that comes with the house.

Recommendation No. 2. There should be more sophisticated training of dealers in working with the consumers to fulfill the consumer's needs. The consumer should receive precise plans, featuring section drawings of all detailing such as cabinets and linen closets. The company must also set up a plan to insure that dealers respond to complaints promptly.

Recommendation No. 3. Further study and research into different design possibilities are needed. The prebuilt manufacturer is just repeating what contractors are building. Research in designs for small starter homes for singles or couples with possibilities of these homes being economically expanded later would be indicated by the fact that price of the home was the reason most couples purchased a prebuilt home. Maybe the answer to new designs is in the areas of those things that cannot be done, or cannot be done economically by the on-site contractor.

Recommendation No. 4. Research and study should be carried out that would show the strength, durability, economy, livability of design, energy efficiency, and workmanship of prebuilt homes. Information that the public can relate to should be used in affirmative mass advertising. Further studies of the best modes of advertising prebuilt houses should be carried out.

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APPENDICES

HUSBAND

Please fill in the following descriptive information:

1. Age (please circle group that your age falls in.)
   1. Under 20
   2. 20-25
   3. 26-30
   4. 31-40
   5. 41-50
   6. Over 50

2. Education level (Please circle highest level attended)
   1. Grade school
   2. Attended high school
   3. High School Graduate
   4. Attended college
   5. College graduate
   6. Trade, technical or other school

3. Occupation: _____ Full time_____ Part time_____

4. Would you purchase another prebuilt home? Yes _____ No _____

5. Please circle your family's level of annual income, including your wife's earnings.

   1. Less than $5,000
   2. $5,000-9,999
   3. $10,000-14,999
   4. $15,000-19,999
   5. $20,000-24,999
   6. $25,000 or above

6. Please circle the pair of square footages that your home falls within. Do not count any additions you have made to the original house or the basement area.

   1. 700-999 sq. ft.
   2. 1,000-1,199 sq. ft.
   3. 1,200-1,699 sq. ft.
   4. 1,700 or more sq. ft.

7. Please check each type of dwelling you looked at before you bought a prebuilt house.

   1. A rental unit
   2. A house built to your specifications by a contractor
   3. A house a contractor had already built
   4. An older house that was for sale
   5. A mobile home
   6. Other

8. Please indicate by circling one of the items below, how you financed your present home.

   1. Conventional loan with a bank.
   2. Federal Housing Administration insured loan
   3. Farmers Home Administration loan
   4. Convention loan with a savings and loan company
   5. Other

9. The major consideration in buying this home was: (Please circle one)

   1. Price
   2. Length of time needed to get it.
   3. Quality of construction
   4. Floor plan and design
   5. Financing available
   6. Other

Please read the items below and indicate your feelings of satisfaction or dissatisfaction. Some of the items deal with the design of your prebuilt home. Some of the items are about the building industry in general. Please rate each statement, using the following scale:

1 - Unsatisfactory, 2 - Fair, 3 - Average, 4 - Good, 5 - Very Satisfactory (Please circle the number after each question)

	U	F	A	G	VS
10. Your home's storage space is	1	2	3	4	5
11. The traffic flow permitted by the floor plan is	1	2	3	4	5
12. The size of the rooms are	1	2	3	4	5
13. The flexibility of arrangement of furniture is	1	2	3	4	5
14. The arrangement of the kitchen work space is	1	2	3	4	5
15. The exterior design of our home is	1	2	3	4	5
16. The convenience of the main bathroom's arrangement is	1	2	3	4	5
17. The workmanship on our prebuilt home is	1	2	3	4	5

		U	F	A	G	VS
18.	The materials used on our prebuilt home are	1	2	3	4	5
19.	The workmanship on the foundation or basement, steps, and walkways are	1	2	3	4	5
20.	The fit of the house upon the foundation or basement of our prebuilt house is	1	2	3	4	5
21.	The adherence to the agreed upon plan and materials of the factory built portion of the house is	1	2	3	4	5
22.	Most people think of prebuilt housing as being	1	2	3	4	5
23.	The availability of houses for sale in this area is	1	2	3	4	5
24.	The availability of a contractor to build a house in this area is	1	2	3	4	5
25.	The selling price of houses that are already built in this area is	1	2	3	4	5
26.	All things taken into consideration, how satisfied are you with your present home?	1	2	3	4	5

HUSBAND

Please fill in the following descriptive information:

1. Age (Please circle group that your age falls in)

   1. Under 20
   2. 20-25
   3. 26-30
   4. 31-40
   5. 41-50
   6. Over 50

2. Education level (Please circle highest level attended)

   1. Grade school
   2. Attended high school
   3. High school graduate
   4. Attended college
   5. College graduate
   6. Trade, technical or other school

3. Occupation: _____ Part _____ Full Time _____

4. Would you purchase another prebuilt home? Yes _____ No _____

5. Please give the age and sex of children living at home:

Child No.	Age	Sex
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____

If more than six children, list in space above.

6. How many years have you lived in your present home?

7. After you placed your order, how long did it take before your home was ready to live in? Please indicate in months. _____

8. The exterior material of your prebuilt house is

   1. Wood siding (painted)
   2. Wood siding (stained)
   3. Brick
   4. Stucco
   5. A metal siding
   6. Other

9. The major consideration in buying this home was: (Please circle one)

   1. Price
   2. Length of time needed to get it
   3. Quality of construction
   4. Floor plan and design
   5. Financing available
   6. Other

Please read the items below and indicate your feelings of satisfaction or dissatisfaction. Some of the items deal with the design of your prebuilt home. Some of the items are about the building industry in general. Please rate each statement using the following scale:

1 - Unsatisfactory, 2 - Fair, 3 - Average, 4 - Good, 5 - Very satisfactory. (Please circle the number after each question)

		U	F	A	G	VS
10.	Your home's storage space is	1	2	3	4	5
11.	The traffic flow permitted by the floor plan is	1	2	3	4	5
12.	The size of the rooms are	1	2	3	4	5
13.	The flexibility of arrangement of furniture is	1	2	3	4	5
14.	The arrangement of the kitchen work space is	1	2	3	4	5
15.	The exterior design of our home is	1	2	3	4	5
16.	The convenience of the main bathroom's arrangement is	1	2	3	4	5
17.	The workmanship on our prebuilt home is	1	2	3	4	5
18.	The materials used on our prebuilt home are	1	2	3	4	5
19.	The workmanship on the foundation or basement, steps and walkways are	1	2	3	4	5
20.	The fit of the house upon the foundation or basement of our prebuilt house is	1	2	3	4	5
21.	The adherence to the agreed upon plan and materials of the factory built portion of your home is	1	2	3	4	5
22.	Most people think of prebuilt housing as being	1	2	3	4	5
23.	The availability of houses for sale in this area is	1	2	3	4	5

		U	F	A	G	VS
24.	The availability of a contractor to build a house in this area is	1	2	3	4	5
25.	The selling price of houses that are already built in this area is	1	2	3	4	5
26.	All things taken into consideration, how satisfied are you with your present home?	1	2	3	4	5

Interview Questions

In those areas scored unsatisfactory on the questionnaire, the home owners were asked to be specific about their dissatisfaction. Comments were accepted that did not pertain to the questions in the questionnaire.

VITA

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Master of Science

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