Un-Plasticized Polyvinyl Chloride and its Growth on Nepalese Market

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ABSTRACT

The paper presents an overview of some marketing strategies that are strongly influencing on the Nepalese un-plasticized poly vinyl chloride door and windows market. The result of the study reveals that product quality improvement is one of the important products related marketing strategies in the doors and windows market of Nepal and addition of new features. The study also reveals that advertisements and exhibitions/meets are two important promotional strategies influencing the consumers in their purchase. This study followed a judgmental sampling technique. The study shows that there is enough evidence to indicate that the brand preference is dependent on market segment in un-plasticized poly vinyl chloride windows in Kathmandu Valley market. Upon the analysis of the product delivery report of the past five years the market seems to be growing at an average rate of 25% annually. Un-plasticized poly vinyl chloride has comparative advantage over wood and aluminum profiles on technical, physical as well as overall performance comparison hence proving to be a better material for doors and windows.

Keywords: Comparative Performance, Energy Saving, Market Study, U-PVC

1. INTRODUCTION

U-PVC known as un-plasticized polyvinyl chloride is a superior material. It is economical, highly durable and ecologically friendly. With the right combination of ingredients like stabilizers, pigments and filters, the optimal quality U-PVC is manufactured. Such fine modern U-PVC windows and doors are far superior to any aluminum, steel and timber systems. U-PVC windows have properties that make it the ideal material and provide the higher quality, durability and efficiency. It eliminates the possibility of air, water and sound leakages.

U-PVC is a very poor conductor of heat and therefore makes an excellent insulator. U-PVC windows and doors will not rust, corrode and doesn't require painting, also it has various other advantages over other materials they are waterproof, termite proof, economical, maintenance free, easy to install. U-PVC

windows and doors could be used in all kinds of buildings regardless of its altitude. This windows and doors are easily operated even under any weather condition due to its coefficient of thermal expansion.
Traditionally, wood has been the constructing material for the doors and window panels. It dates back to centuries since the wood has found its use as a constructing material. In recent times, U-PVC has been used as a substitute of wood, which is a very positive step. The importance of U-PVC over wood in the present scenario cannot be denied nor can be neglected. Let aside all the technical benefits, the environmental aspect of U-PVC can single-handedly dethrone wood as a constructing material.
Most of the people are unknown about U-PVC along with some are having negative concept of taking it as plastic. The research is carried out so that people can know about U-PVC and can be able to compare its properties with other materials. Because of the lack of knowledge about market trend it is also difficult for the smaller new entrant groups. Along with the pros that are suitable for our country are not properly explained by sales personals because of which people are not able to make their decisions. The aim of this research paper is to understand about U-PVC and analyze the Nepalese U-PVC market.

2. LITERATURE REVIEW

Marketing deals with the activities that direct the flow of goods and services from producer to consumers. Identifying and meeting the human and social needs fall under its ambit. The present business situation is characterized by consumer oriented market. Immense competitions, rapid strides in technology and liberalization, privatization and globalization have become the major points in competitive edge in the market. In these circumstances the survival and growth of a business firm essentially depends on a marketing strategy which results in broadening the customer bases as much as possible by not only creating new customer bases but also retaining existing customers. The researcher was fascinated by the new developments and trends in the marketing field of Nepal. After conducting preliminary survey, it was decided to focus on the fast growing construction industry[1].
The construction industry is growing in different regions due to various reasons, such as population, tourism, urbanization, etc. The growth of the construction industry will, thus, help the growth of the U-PVC market. The plastic industry which holds a prominent share in various sectors will also help in boosting the sales of U-PVC. U-PVC can also be recycled and reshaped, a particular factor that will further push U-PVC market growth. The lower cost of U-PVC polymer will help in growth of u-PVC sales. Other uses of U-PVC, such as in dental retainers, will also contribute to the growth of the u-PVC market. Regulations regarding the use of U-PVC material will retard the growth of the U-PVC market in future. Rigid and non-flexible nature of U-PVC has restricted the use of U-PVC pipes for various applications, such high pressure transport of materials. This restricted use of U-PVC will slow down the growth of U-PVC sales[2].
In Nepal aluminum products dominate the windows and doors market. Though there are some U-PVC players in the market, they are hardly organized and qualified. Companies are serving factory-made products on the basis of size and specification ordered by the customers. Factory-made products are superior to the products made by carpenters. Since polyvinyl-chloride products, they are good resistant of heat, sound, rain and electricity. Welded joint, double seals and multiple-point locking systems of the products not only stop the dust, dirt, rain and wind from penetrating the houses but also reduce street noises. PVC doors and windows are bad conductor of heat that reduces energy consumption while running air-conditioner (AC). This decreases electricity bill by 20-30 percent.
There is competition but the one with quality preferring are in league. The types of products and services which we are offering are unique. The quality service which offer will be one of the great USPs.

Providing end-to-end service from production to fabrication and installation to handover and sales gives a competitive edge [3]

U-PVC windows & doors is mainly used in the replacement for wood in construction. This technology meets the higher demands of inhabitant comfort as it is durable with minimal expansion and contraction, provides superior insulation from outside heat, are self-extinguishing and do not propagate fire. It is the material of choice for achieving both economic and environmental balance. Throughout the globe, for more than 30 years, U-PVC has become one of the most used materials. From the deserts of Arizona to the coldest parts of Scandinavia, this technology has been serving successfully. This material also has been proved to be useful in extreme hot conditions of the gulf. With the U-PVC windows and doors market share growing faster than any other new product in Australia, and its market being established in global scenario, builders from Nepal are also increasingly using and preferring this materials.

Kshamadevi building materials is the authorized dealer of CONCH brand U-PVC materials being manufactured and traded by China Anhui Conch Group and Wuhu Conch Profiles and Science Co. Ltd. With the experience of more than 6-7 decades in this industry, these companies have the production capacity of 60 million tons and are currently serving all over China and are exported to numerous countries like United Kingdom, Germany, and Russia[4].

PVC (Polyvinyl chloride) is a common strong but light weight plastic used in construction. It is made softer and more flexible by the addition of plasticizers. If no plasticizers are added then the rigid PVC thus formed is known as U-PVC.

Table 1: Comparison Table of PVC and U-PVC

	PVC	U-PVC
Uses	Pipes, cable insulation, clothes, toys	Windows and doors along with frames, plumbing and draining
Properties	Flexible but durable , low cost	Rigid and Durable, doesn't flex, fire resistant, recyclable
Contains Phthalates	YES	NO
Contains BPA	YES	NO

3. RESEARCH METHODOLOGY

3.1. THEORETICAL FRAMEWORK

Research methodology is a systematic way to solve the research problem. In other words, research methodology describes the methods and process applied in the entire aspect of the study. Research methodology refers to the various sequential steps to be adopted by a researcher in studying a problem with certain objectives in view.

Various articles, manuals, books, journals and websites related to U-PVC and field observation along with consulting with market related people are the basic source of data collection.

The market study was done to analyze and find out the competitors in the market. From this study, the researcher tried to find out share of top competitors and analyzed the overall growth of U-PVC market. To analyze the fabrication process of doors and windows each and every steps related with respective machines were observed. The work flow pattern along with the quality maintaining activities were observed. For finding the differences some of the fabricators were observed and analyzed.

The data were collected through the direct visit and informal discussions regarding the topics with the related officials also proved beneficial for the project. Our primary data source, qualitative data, was applied because of its strength in exploring a research area that previously has not been broadly researched and to increase the reliability of the research conclusions. Qualitative primary data had collected with the aim of gathering the essential data to analyze and present a comprehend side view of the incentive, the actors, the relationship between the actors and the charging infrastructure challenges.
Following methods had been adopted to collect the data required:
Data, journals and reports were consulted and surveyed in order to know more about the topic.
Fabrication along with comparatively response of customers was thoroughly observed and studied.
The secondary data are complements to the primary data, in order to find similarities and differences, and serve as additional contributions to certain issues of interest. A usage of a wide variety of reports, academic papers, books, customer surveys, media and press releases constitute our secondary data. We utilized these to create an overview of existing literature about U-PVC, the growth on market, the opportunities that seems for its expansion in markets, the technical variation as compared with other materials. In a nut shell, the following activities were done: Study of books and articles along with visits of websites and electronic documents.

3.2. DESIGN

The steps that was followed during the research is as below.

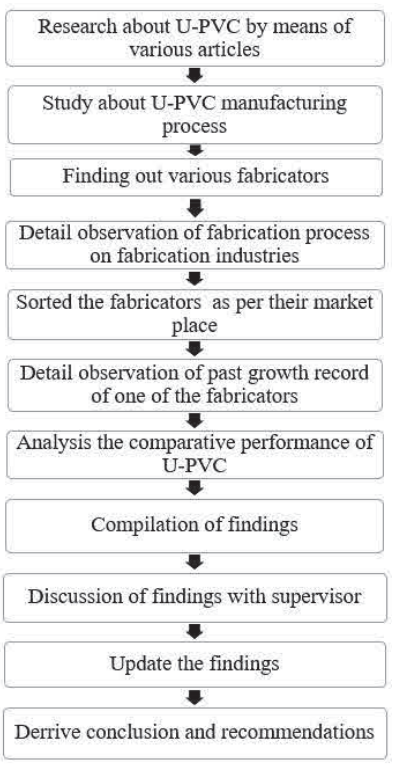

Figure 1: Block diagram of research process

4. CASE STUDY

4.1. COMPARATIVE PERFORMANCE OBSERVATION

In the window and door frame market, the materials that are highly consumed are Wood, Aluminum and U-PVC. They are consumed either for residential purposes or for commercial purposes. In that purposes, they might be used either for new installation or for improvement and repair. While using them, we should be clear about their functions so that we can make a better choice.

Table 1: Comparative Performance of Different Profiles

SN	Activities	U-PVC Profiles	Aluminum Profiles	Wood Profiles
1.	Price (same area and same thickness)	Cheaper (on average of Rs.580 per sq.ft)	Expensive compared to U-PVC (on average of Rs.800 per sq.ft)	Most expensive (on average of Rs.1500 per sq.ft without labor cost)
2.	Tensile Strength and durability	Less as compared to aluminum (62 Mega Pascal)	Maximum if quality is good (92 Mega Pascal)	Moderate in strength but durability can't be confirmed (on avg. of 60Mpa)
3.	Operation	Smoothly without making noise	Make more noise	Not smooth and make noises
4.	Expansion and contraction	Remains stable	Very high thermal co-efficient, leads to distortion if not installed properly	Absorb moisture Expand and contract Distortion and gaps
5.	Energy at the time of production	Eco friendly Consume less energy	Large amount of energy 7.5 times of U-PVC	Less as compared to aluminum
6.	Termite resistances	Completely termite resistances	Completely termite resistances	Prone to termite Should be coated with protective layers
7.	Eco-friendliness	Eco-friendly	Eco-friendly	Causes deforestation
8.	Waste disposal	Up to 99% U-PVC can be separated and disposed	Separation of hardware from profiles is difficult	Separation is quite difficult
9.	Resistance to corrosion	Don't rust or corrode due to inherent material character	Prone to oxidation and susceptible to corrosion	Don't rust / Corrode
10.	UV resistance	Special UV resistant blend Don't fade	Powder coated / anodized can discolor	Start fading very soon Require constant re-polishing

11.	Fire protection	Self-extinguishing and don't propagate fire	Very high melting temperature	Catch fire easily
12.	Fire escape	Allow easy escape as glass can be easily pushed out	Don't assist in easily break away	Fire is high as it catches fire
13.	Weight	Light weight	Light weight	Heavy weight
14.	Finishing	Doesn't require finish or polish	Require powder coating or anodizing	Require paint or Polishing
15.	Aesthetics	Bulky and unsightly Plastic look	Slimmer, clean and minimal look	Aesthetically pleasing But required more effort
16.	Sound insulation	Comparatively very high sound proofing, Reduction between (33db and 43db)	Comparatively low sound proof Can reduce between (10db to 20db)	Better than aluminum but less sound proof than U-PVC (17db to 28db)
17.	Scrap value	Low scrap value (Rs.33 per kg)	High Scrap value (Rs. 60 per kg)	Very low scrap value (Rs. 15 per kg)
18.	Effect of moisture	Doesn't swell	Water with higher pH can attack	Absorbs water and expands Difficult to shut down
19.	Weather Condition	Can be used in all-weather condition	Can be used in extreme weather condition but if the powder coating gets damaged they may get corroded	Can't be used in coastal and heavy rainfall areas
20.	Recycling	Can be recycled for more than 10 times	Can be recycled almost forever	Can be recycled with certain limitation
21.	Security	Pretty secured	Pretty secured	Vulnerable to force if they degrade
22.	Life span	40- 50 years	50 years +	30+
23.	Low maintenance	No painting only routine cleaning	May require maintenance over long usage period	Need regular painting and polishing
24.	Thermal insulation	Superior thermal insulation (U value between 1.5 to 1.7 W/m2 k)	Thermally in-efficient, Heat can pass (U value 250 W/m2 k)	Thermal insulation but air gaps creates heat passes

4.2. ANALYSIS OF PAST YEARS GROWTH OF CERTAIN COMPANY

Collecting the past product delivery report of a specified company, following findings were observed.

Table 2: Product Delivery Report of Year (2073/2074)

SN	Month	Delivered Product in sq. feet
1	Shrawn	2907.79
2	Bhadra	3825.15
3	Ashwin	2744.84
4	Kartik	2607.89
5	Mangsir	3309.14
6	Poush	3002.62
7	Magh	2206.93
8	Falgun	6317.87
9	Chaitra	2615.35
10	Baishakh	4318.77
11	Jestha	5026.82
12	Asadh	3195.39
Total		42078.56

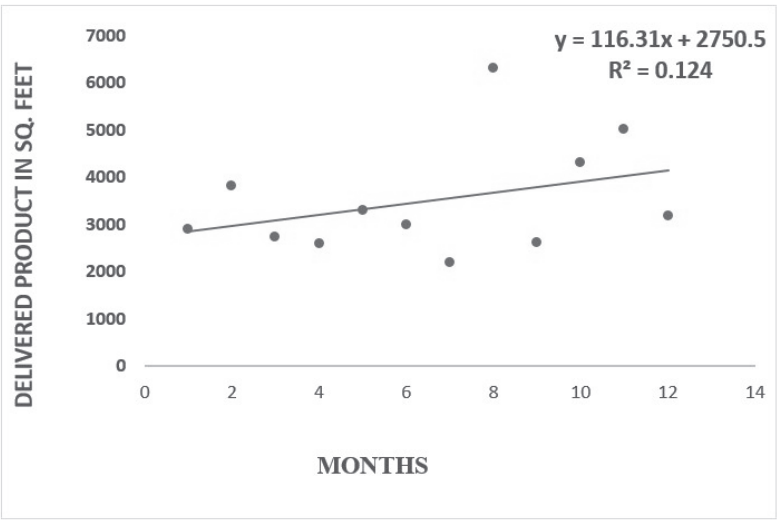

Figure 2: Chart of Monthly Report (2073/2074)

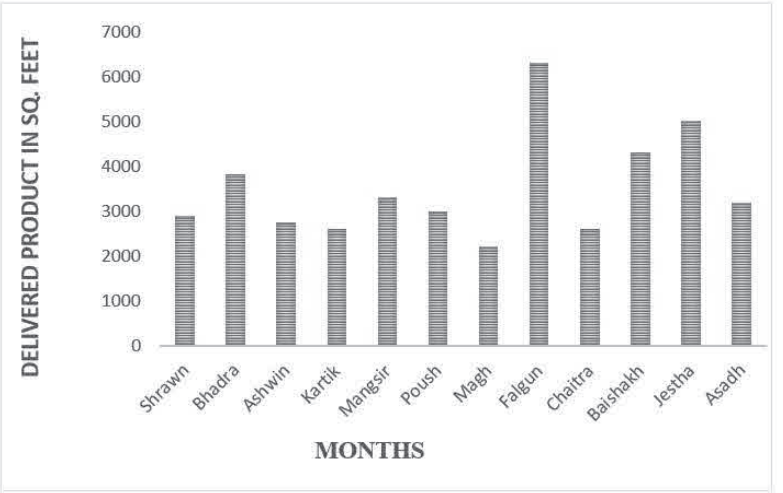

Figure 3: Bar diagram of monthly production (2073/2074)

Table 3: Product Delivery Report of Year (2074/2075)

SN	MONTH	DELIVERED PRODUCT IN SQ. FEET
1	SHRAWN	4790.13
2	BHADRA	551.56
3	ASHWIN	3343.11
4	KARTIK	3866.92
5	MANGSIR	3000
6	POUSH	1042.18
7	MAGH	4221.18
8	FALGUN	6364.45
9	CHAITRA	6402.54
10	BAISHAKH	5179.84
11	JESTHA	8825.56
12	ASADH	8048.08
TOTAL		62365.55

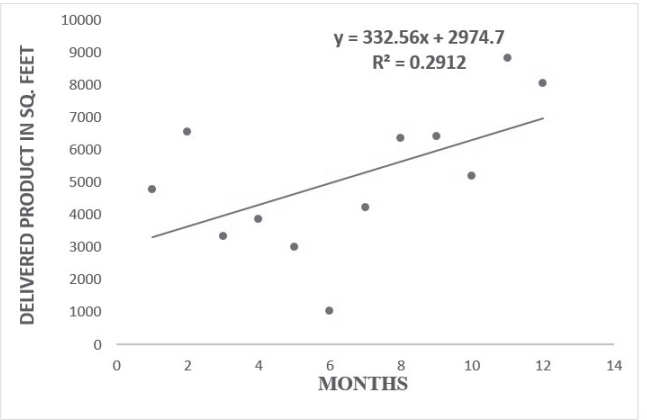

Figure 4: Chart of Monthly Report (2074/2075)

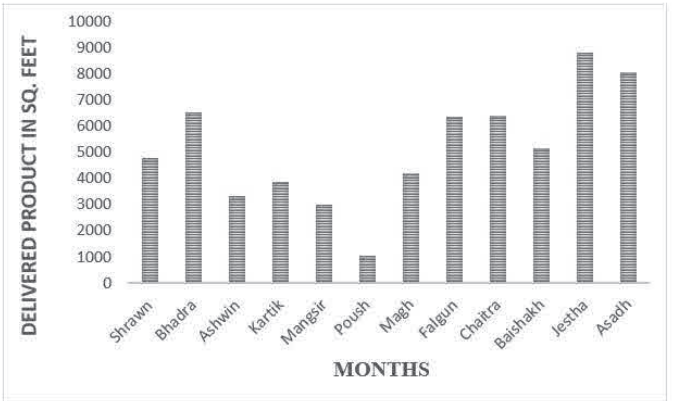

Figure 5: Bar diagram of Monthly Production (2074/2075)

Table 4: Product deliver report of year (2075/2076)

SN	MONTH	DELIVERED PRODUCT IN SQ. FEET
1	SHRAWN	7049.04
2	BHADRA	8335.49
3	ASHWIN	6565.84
4	KARTIK	5256.62
5	MANGSIR	7143.08
6	POUSH	7870.05
7	MAGH	6133.11
8	FALGUN	5166.14
9	CHAITRA	6834.83
10	BAISHAKH	7560.67
11	JESTHA	8685.9
12	ASADH	9329.15
TOTAL		84929.92

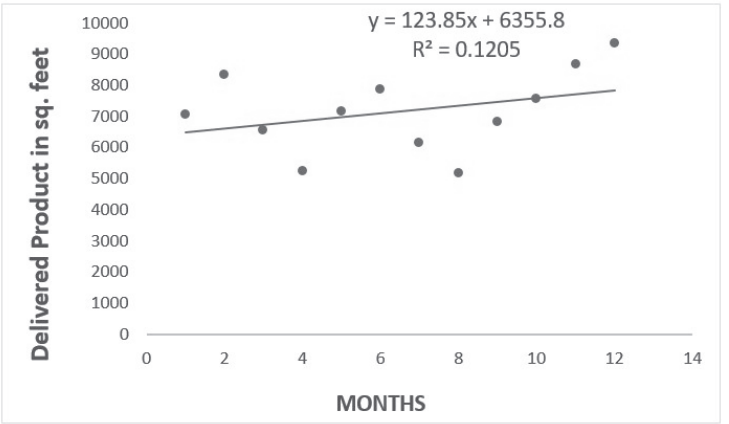

Figure 6: Chart of monthly report (2075/2076)

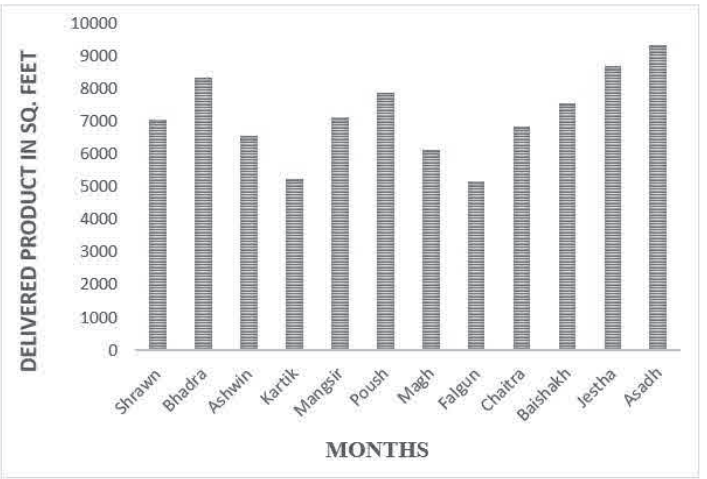

Figure 7: Bar diagram of monthly production (2075/2076)

5. RESULTS AND DISCUSSION

5.1. RESULTS

From the study of various research paper along with the literature review and various activities that are performed while completing this research we came to know about the U-PVC profiles, its manufacturing, fabricating process. From the market study we are able to understand the requirement for the new entrant in the U-PVC market along with the technical knowledge of U-PVC. Also by the glance on performance comparison, we are able to select the profile materials either U-PVC, aluminum or wood materials as per our needs. Also the major fabricators and industries that are engaging on U-PVC works can find out the tentative target competing the players in the markets. Observing the market data, we can analysis the remarkable growth.

5.2. DISCUSSION

The various topics related to the extruding and fabricating process are discussed. On observing the Nepalese market, various data related to the growth of U-PVC as people are shifting their mind towards the U-PVC replacing aluminum and woods. We find the result of remarkable growth along with we can have the predicated result of some years which shows the growth of U-PVC market. The following table can be in the support of our result.

Table 5: Yearly Report

SN	YEAR	DELIVERED PRODUCT IN SQ. FEET
1	2071/2072	28486.45
2	2072/2073	32586.32
3	2073/2074	42078.56
4	2074/2075	62635.55
5	2075/2076	84929.15
6	2076/2077	93026
7	2077/2078	107313.8

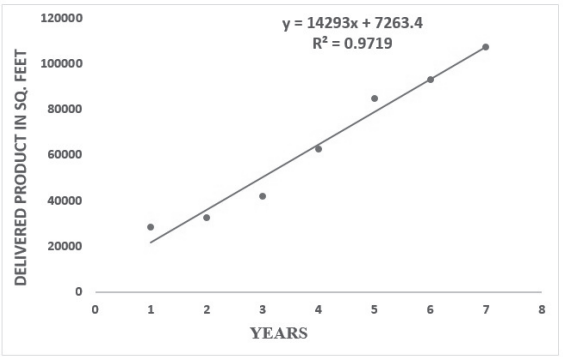

Figure 8: Chart of Yearly Report

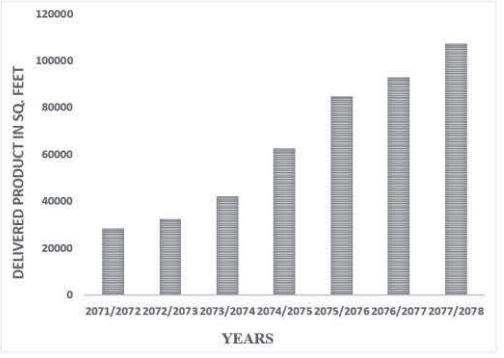

Figure 9: Bar diagram of yearly production

In an overall view, average growth rate per year on U-PVC market is found to be on an average of 25%.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. CONCLUSION

Though the various materials are using as doors and windows profiles, the commonly used are wood, aluminum and U-PVC. They all have their own pros and cons. They are used as per their requirements. On the context of energy saving mode along with overall view, U-PVC is found to be more suitable. U-

PVC manufacturing process along with fabrication process are also observed as per the objectives. Various competitors are competing in the market among which around 10 of them have already established their name in this market. Analyzing the product delivery report of specified company, it can be concluded that the U-PVC market is flourishing day by day.

6.2. RECOMMENDATIONS

During the research we have found various field where we can have certain changes along with adaptation. Some of the recommendations that we want to put forward are as below.

6.2.1. Trained marketing officers

In most of the industries, they are not having properly trained marketing officers because of which their organization name, product and service they are providing are unheard by the consumers (people). So they should be able to spread their information widely.

6.2.2. Commission or incentives facilities

Observing the market those which are preferring certain incentives or commission to the concerned people are able to get the bigger projects else most of them are engaged on residential purposes only. If such schemes are made, company profile will be advertise among the normal people with the return back of more target meeting projects.

6.2.3. Timely communication with customers

Communicating the customers time to time establish a caring relation of organization towards the customer. It establishes the positive image of the company and consumer will recommend their friends too for our hospitality.

6.2.4. Quality products

On providing the product, factories should focused on quality. Providing the goods at low cost without maintaining the quality will decrease the company fame in the market which directly hamper their share value.

6.2.5. Branch offices

By analyzing the peoples view, factories should be able to establish their branches at appropriate locations to serve the consumer. This enhances the overall production as well as make the market holding power stronger.

6.2.6. Policies

Various fabricators are entering in the market but the policies related to the U-PVC within our country doesn't seems to be practiced. So, to enhance the overall country consumption, all the fabricators should be under one organization, make certain policies and should implement and follow them strictly.

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