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Enhancing the Marketing Mix Factors in the UPVC and Aluminium Windows and Doors Industry in Egypt

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1. Abstract:
This research aims to evaluate the marketing mix factor and assess its effect on the competitive advantage of the UPVC and Aluminium windows and doors industry in Egypt to explore the most affected factors on the customers buying decisions; using the Fuzzy Hierocracy Process (FAHP); in addition, to analyse the weight of each marketing mix factors affecting UPVC and Aluminium industry. To prove the ability of the proposed framework based on actual study was conducted in the UPVC and Aluminium windows and doors industry in Egypt for the year 2020. Since there is no papers or thesis in the field of windows and doors in Egypt had been made before so the researcher makes this paper to be a primary reference for the next research in the field.

Keywords: UPVC, Aluminium, Windows, and Doors Industry.

2. Introduction:

The window is an opening in the wall to transfer light and air in. The bad effect of the window is that it does not just transfer light in, it makes the heat goes out. gives the climate access and may give undesirable guests access. Early "windows" in the brown metal that's copper and tin and Iron Ages fought these disadvantages by utilizing shutters which had been made from wood and even bringing animals skins and made scrapping and stretching to it and putting it in oils to make them transparent and water resistant. The creation of glass made things a stride further by giving a cover to windows which allows the transfer of light in and at the same time keeping any other things out. The utilization of glass for building purposes started at the end of the 1st century BC after the Romans found that by adding manganese oxide to other combination, they got a little clear glass. This glass was just utilized in the buildings that have a great degree of importance.

The improvement of window glass creation techniques to deliver bigger, compliment pieces with better clearness has affected the designer's ideas of windows through days. It is the constraint of the size of a window that gives us leaded lights and. It is interested that some advanced, costly, glass impacts are amusements of what might have been blames, or even consuming in old glass. old glass creation methods of projecting, blowing, and turning were with the end goal that solitary little sheets of predictable thickness and clearness could be delivered. These then must be gotten together with lead strips to create a sensible territory. As glass creation innovation created, larger sheet could be delivered which offered ascend to the windows designing through the time utilizing the largest size of sheets to give the clearest view.

2.1 The difference between UPVC and aluminium windows and doors:

2.1.1 UPVC windows:

UPVC means UN plasticized poly vinyl chloride; Germany was the first country that introduced the UPVC windows to the world in the period of the 70s to mid-80s and turned out to be amazingly well known in most of the world during the 80s.

2.1.2 Aluminium windows:

Aluminium is a metal characterized and differs from iron by its lighter weight but it is very strong also its more flexible and not magnetized, it's a great good conductor for electricity and it could be used in combination with many other metals to form different alloys.

3. Literature review:

Since there is no papers or thesis in the field of windows and doors in Egypt had made before so we decide to make the literature review to be a study for this market in Egypt. In this paper we are going to introduce the imports of the raw materials of windows and doors in Egypt from the international trade centre ITC (www.trademap.org) and make analysis for this data to compare between the three main materials of windows and doors (Wood-Aluminium-UPVC) in the last 10 years and to observe the market share of each kind of windows in the Egyptian market.

3.1 UPVC

As shown in table (1) the variance of the imported UPVC raw materials in ten years in Egypt. By comparing between 2011and 2010 there was an increase in Egypt by 44%. the comparison between 2012and 2011 shows a decrease in Egypt by 20%. Since 2012 till 2014 there was a decrease in Egypt begins with 20% in 2012 and ends with 24% in 2014 and it jumps in 2105 by 33% and returns to decline in 2016 and 2017 dramatically by 57% and 61% , 2018 was a turning point in Egypt. The imported values increased by 33% compared by 2017 and it jumped by almost the double percentage between 2018 and 2019

Table (1) "The value and variance of the imported UPVC windows & doors raw materials in 10 years"

material	years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
UPVC	value	1,339	1,931	1,540	1,518	1,154	1,530	662	260	345	643
	%variance		44%	-20%	-1%	-24%	-33%	-57%	-61%	33%	86%

Source: values from international trade centre and calculations by the author

As shown in table (1) the imports values in 2010 was 1,339 M$ then it increases to by 44% in 2011 to reaches the highest amount in the all 10 years by 1,931 M$ after 2011 it was almost the same in 2012 and 2013 then it dropped down in 2015 by 24% and returned almost as 2012 and 2013 in 2015 after 2015 it dropped down dramatically in the next 4 years

3.2 Aluminium

As shown in table (2) the variance of the imported aluminium raw materials in ten years in Egypt. By comparing between 2011-2010 there was a decrease in Egypt by 57%. The comparison between 2012-2011, 2013-2012 shows an increase in Egypt by 98% and 43%. Then there was a big decrease almost the double in 2014 by 56% then it raised to the double of 2014 in 2015 by 74%. In 2016 till 2018 it was the decline cycle of aluminium imports to Egypt begins by 6% in 2016 and ends with 32% in 2018 and it begins to turn in 2019 by increasing 16%

Table (2) "The value and variance of the imported Aluminium windows & doors raw materials in 10 years"

material	years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aluminium	value	2,268	985	1,952	2,795	1,216	2,110	1,982	1.820	1,241	1,438
	%variance		-57%	98%	43%	-56%	74%	-6%	-8%	-32%	16%

Source: values from international trade centre and calculations by the author

As shown in table (2) the value of imports in 2010 was 2,268 M$ which is almost the double amount of UPVC imports in the same year then its dropped down by 57% in 2011 oppositely with UPVC in the same year then the increase begins by the double amount in 2012 and 2013 in

2014 the amount decreases to the half by 1.216 M$ in 2015 the amount increases to 2,110 M$ then the decrease begins from 2016 till 2018 and it increases slightly in 2019 by 1,438 M$.

3. 3 wood

As shown in table (3) the variance of the imported windows and doors wood raw materials in ten years in Egypt. There was a decrease in Egypt since 2010 till 2012 by 20% and 28%. Then the imported raw materials increased in the next three years since 2013 till 2015 by huge increase 45% in 2013 and 4% and 22% in 2014 and 2015 then a little decrease occurs in 2016 by 3% and a higher decrease in 2017 by 27% the curve turned in 2018 and 2019 by 64% in 2018 and 10% in 2019.

Table (3) "The value and variance of the imported Wood windows & doors raw materials in 10 years"

material	years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Wood	value	4,390	3,502	2,510	3,643	3,801	4,652	4,522	3,292	5,413	5,935
	%variance		-20%	-28%	45%	4%	22%	-3%	-27%	64%	10%

Source: values from international trade centre and calculations by the author

As shown in table (3) the values of imports in 2010 was 4,390 M$ which is almost the double amount of Aluminium imports and 4 times the UPVC imports in the same year then its dropped down by 20% in 2011 and the decrease remains in 2012 then the curve was rising from 2013 till 2015 the amount decreases slightly in 2016 by 4,522 M$, in 2017 there was a decrease by 3,292 then the increase begins again in the last 2 years.

3.4 The market share of the windows and doors materials in Egypt

After the analysis for each material in the last 10 years, we now can calculate the average for each material to know the market share for each kind of windows in the Egyptian market. As shown in table (4) the total imports of the UPVC in the last 10 years was 10,922 M$, the Aluminium imports was 17,807 M$ and the wood imports was 41,660 M$ the total amount of windows in Egypt in the last 10 years was 70,389 M$

Table (4) "The market share of each kind of windows in Egypt"

Material	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	∑	%
UPVC	1,339	1,931	1,540	1,518	1,154	1,530	662	260	345	643	**10,922**	**16%**
Alum	2,268	985	1,952	2,795	1,216	2,110	1,982	1.820	1,241	1,438	**17,807**	**25%**
Wood	4,390	3,502	2,510	3,643	3,801	4,652	4,522	3,292	5,413	5,935	**41,660**	**59%**
Total	**7,997**	**6,418**	**6,002**	**7,956**	**6,171**	**8,292**	**7,166**	**5,372**	**6,999**	**8,016**	**70,389**	**100%**

Source: values from international trade centre and calculations by the author.

As shown in table (4) we can now know that the UPVC windows and doors have 16% of the Egyptian windows and doors market the Aluminium windows and doors have a 25% of the market and finally the wood windows and doors have a 59% of the Egyptian windows and doors market

4. Research methodology:

The Analytic Hierarchy Process has been identified as a general theory of measurement (Saaty and Vargas, 2006). Analytic Hierarchy Process offers many solutions for problems because it compare the weight of each criteria with different alternatives in a hierarchic structure. AHP can be understood broadly as a theory of measurement using quantitative and/or qualitative data; it allows the use of qualitative as well as quantitative criteria in the evaluation (Bernasconi et al., 2010). The Analytic Hierarchy Process has a big advantage which is it can compare intangibles criteria in a structured way such as Perhaps the biggest advantage of this method is that it allows the inclusion of intangibles such as experience and preferences. It allows a more accurate description of the DM process (Mu, and Pereyra-Rojas, 2017).

This research will apply Fuzzy AHP by using questionnaire. According to this tool the respondent has to respond to the same questions in the questionnaire form, for that, AHP considered as an important tool to collect data within survey strategy (Saunders et al., 2007). This research illustrates the concept of the Analytic Hierarchy Process (AHP), the sampling type used in AHP model. The analysis consists of four sections. The first section shows the general proposed framework of the FAHP. The second section illustrates the empirical study on the Egyptian UPVC and Aluminium windows and doors industry. Section three reviews research validity and reliability. Finally, the summary of this chapter is provided in section four.

The Proposed Framework

This thesis proposes a framework to rank the competitiveness of the UPVC and Aluminium windows and doors industry using FAHP according to the next steps:

A: evaluating the level of competitiveness by identifying the criteria

The aim of the FAHP is to identify the weight of each criteria used in evaluating and assessing the UPVC and Aluminium windows and doors industry.

B: Identify the relative importance of selected criteria by developing FAHP survey

Using a scale from 1 to 9 a FAHP survey was developed to assess the relative importance weight of the selected criteria (Saaty and Kearns, 1985). Table (1) illustrates Saaty's pairwise comparison scale.

Table (1) Pairwise comparison scale.

Judgment	Value
Extreme more important	9
Very strong more important	7
Strong more important	5
Moderate more important	3
Equal important	1
Intermediate values between two adjacent judgments	2, 4, 6 and 8
These values represent the opposite of the reciprocal whole numbers	1/3, 1/5, 1/7 and 1/9

Reference: (Saaty and Kearns, 1985).

The following questionnaire form was used to determine the weights of the selected criteria - using a scale, where one demonstrate equal important and 9 Extreme more important, 7

demonstrably more important, 5 strongly more important and 3 indicates moderate more important

An electronic survey was distributed in order assess the relative importance weight of selected criteria such as Customers, Companies and Experts in the field. Table (2) shows the survey form.

Table (2) FAHP Questionnaire form.

With respect to competitiveness	**(Decision Alternatives D.A.'s)**									
Product	9	7	5	3	1	3	5	7	9	Price
	9	7	5	3	1	3	5	7	9	Place
	9	7	5	3	1	3	5	7	9	Promotion
	9	7	5	3	1	3	5	7	9	After sales service
Price	9	7	5	3	1	3	5	7	9	Place
	9	7	5	3	1	3	5	7	9	Promotion
	9	7	5	3	1	3	5	7	9	After sales service
Place	9	7	5	3	1	3	5	7	9	Promotion
	9	7	5	3	1	3	5	7	9	After sales service
Promotion	9	7	5	3	1	3	5	7	9	After sales service

The second survey was formulated using Likert scale from excellent to very poor; to evaluate the current performance of the competitiveness.

As illustrated in the next table (3), a Likert scale questionnaire form using performance rating scale (excellent, good, very good, poor and very poor) is established to rank the competitiveness of door and windows industry, where 1 signifies excellent performance, 0.8 signifies very good performance, 0.6 signifies good performance, 0.4 signifies poor performance and 0.2 signifies very poor performance.

Table (3) Likert Scale questionnaire.

		Excellent	**V. good**	**Good**	**Poor**	**V. poor**
Product	**Aluminium**					
	UPVC					
Price	**Aluminium**					
	UPVC					
Place	**Aluminium**					
	UPVC					
Promotion	**Aluminium**					
	UPVC					
After sales service	**Aluminium**					
	UPVC					

AHP has a great advantage such as simplicity. In addition, it can compare tangible and in tangible (Al Khalil, 2002). Table (4) show the pair comparison of selected criteria.

Table (4) Pairwise comparison matrix of criteria.

	1				7
		1			
			1		
				1	
	1/7				1
SUM	…..	…..	…..	…..	…..

It is necessary to check that the judgment is consistent. For this purpose, FAHP calculates a Consistency Ratio (CR) comparing the Consistency Index (CI) of the matrix, as illustrated in table (5).

Table (5) Random Consistency Index of Analytic Hierarchy Process.

Number of criteria	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
RI	0.00	0.00	0.58	0.9	1.12	1.24	1.32	1.41	1.46	1.49

Source: (Teknomo, 2006)

To calculate CR, we need to calculate the Consistency Index (CI), as shown in equation (1), CI measures the degree of logical consistency" according to (Brunnelli, 2015), CI can be explained as:

$$CI = \frac{\lambda_{max} - n}{n - 1} \quad (1)$$

Where, λ_{max}. = Σ YkXk, and n is the number of compared elements (in this case n = 6), as shown in equation (2) (Alexander, 2012), after calculating CR we can calculate the Consistency Ratio (CR), according to (Triantaphyllou and Mann, 1995) CR can be explained as:

$$CR = CI/RI \quad (2)$$

CR = CI/RI. The proportion of inconsistency CR should be less than 0.10, to continue the process of FAHP (Elgazzar, 2013).

To reach the validity of the judgment decisions outputted from AHP model in any research, the CR should be calculated which determines the allowed inconsistency ratio 0.10 or 10%; more than these values mean the comparisons are less consistent. On the opposite, the smaller numbers mean comparisons are more consistent.

Three: Evaluate each efficiency criterion by establishing a performance rating scale
Using a performance rating scale (excellent, very good, good, poor and very poor)

Four: Calculating the competitiveness index of UPVC and Aluminium windows and doors industry

First, we determining, the relative weight, and the performance rate of each criterion, the weighted rate (WR) of each criterion is calculated. Finally, the weighted rates of selected criteria using a weighted average aggregation method (Ismail and Elgazzar, 2018).

5. Empirical Study:

This section attempts to measure the competitiveness of the UPVC and Aluminium Windows and Doors Industry in Egypt to find out the present status and the drawbacks. It will suggest solutions for eliminating drawbacks and improve the competitiveness position of the UPVC and aluminium windows and doors industry in Egypt.

This paper focuses on the five main marketing mix factors in the UPVC & Aluminium windows and doors industry UPVC & Aluminium windows and doors industry in Egypt for the year 2020, Primary data was collected from customers, companies in the field. This thesis proposes a framework using FAHP technique based on the following steps:

One: Evaluate the level of competitiveness between the UPVC & Aluminium windows and doors by identifying the criteria

Previous studies identified the five main criteria that reflect the marketing mix factors; product: price, place, promotion and after sales services.

The researcher developed a model by breaking down the decision into a hierarchy of alternatives and criteria, as shown in figure (1).

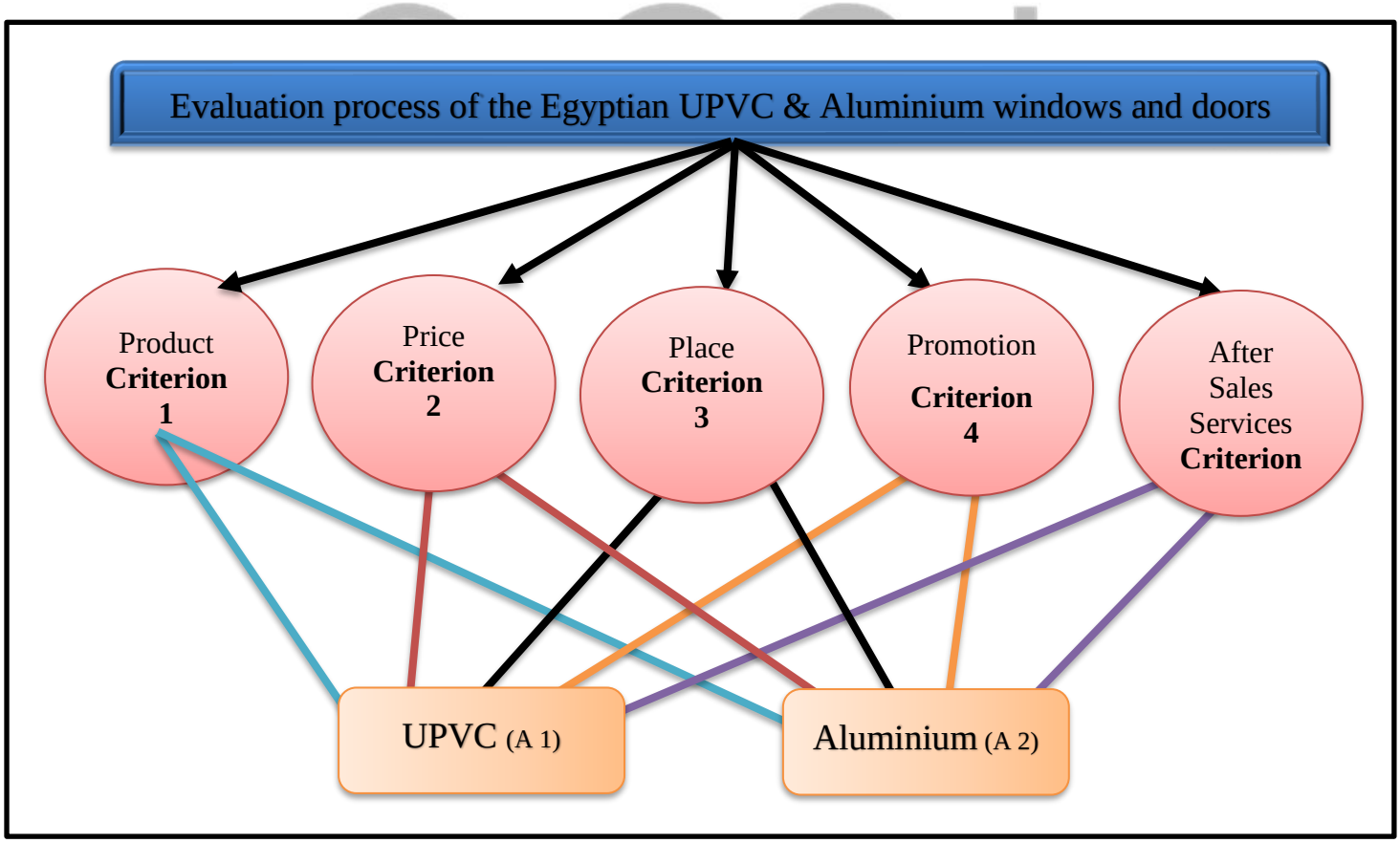

Figure (1) Evaluation process of the Egyptian UPVC & Aluminium windows and doors.
Source: Author's own calculation.

Two: Developing a FAHP questionnaire form to identify the weight of each criteria
The main objective of this survey is to determine the relative importance weights of the Egyptian UPVC & Aluminium windows and door's five main marketing mix factors using AHP approach to determine the weight of each criteria (Product, Price, Place, Promotion and After sales services) with respect to the priorities of profitability. The questionnaire form was conducted with the group of experts to determine the priorities of the main measures.

B 2 C empirical analysis:
A questionnaire was conducted with the group of experts to determine the priorities of the main measures. In order to do statistical analysis for the UPVC & Aluminium windows and doors industry by applying AHP model, the researcher input the valid questionnaire forms that collected from questionnaire's participants, as shown in the previous section, into an excel sheet to run and analyse these data by using Fuzzy AHP model.

To determine the relative importance weight of each variable, a fuzzy pairwise questionnaire, based on expert's opinion we calculate the pairwise questionnaires based on questionnaire's participants; as shown in table (7)

Calculating the Consistency
To ensure the consistent of the judgment are, we have to calculate the consistency level.

The CR of a decision should not exceed 0.1. In the case where CR exceeds 0.1, the comparison matrix is considered inconsistent and should be improved (Elgazzar, 2013; Dyck and Ismael, 2015). For any metrics at any level, if the value of the Consistency Ratio is smaller or equal to 10%, the inconsistency is acceptable (Mu and Rojas, 2017). If the Consistency Ratio is greater than 10%, the pair-wise comparison processes should be repeated until the consistency ratio is less than 0.1.

Three main steps to calculate the Consistency Ratio:

1) Calculation of Eigenvalue (λmax)

λmax = 5.04971. In addition, total the five criteria should equal one as illustrated in appendix (4-1) "0.4197 + 0.2131 + 0.1381 + 0.0843 + 0.1245 = 1".

2) Calculation of Consistency Index (CI).
Where CI = λmax - N / N - 1 (Kousalya et al., 2012).
CI= 5.04791 – 5 / 5 – 1 = 0.012

3) Calculation of Consistency Ratio (CR).
Where CR = CI/RI (Triantaphyllou and Mann, 1995). defining the suitable value of (RI) from the table of the above table, RI = 1.12, CR= 0.0120 / 1.12 = 0.010694196.

In this context, the researcher calculated the CR in order to verify the consistency of responses; and found 0.012 as shown in the next table (6) is lower than 0.1. Therefore, our judgments matrix is reasonably consistent (Elgazzar, 2013). Also, the CI result reflects increase in the validity degree of this research, because the result is reliable only when CR value is 0.1 or less.

Table (6) Consistency test.

EIGENVALUE	N	CI	RI	CR
5.04791	5	0.0120	1.12	0.010694196

Source: Author's own calculation.

After determine the Consistency Ratio, to determine the most important criteria that

Defining the relative importance weights of selected variables

Sum of all weighted criteria should equal to one, as shown in the table (7) otherwise is wrong.

Table (7) Relative importance weights of the five main criteria.

Criterion	Priority	
Product	0.4197	1
Price	0.2131	2
Place	0.1381	3
Promotion	0.0843	5
After sales service	0.1245	4
Sum	**100%**	

Source: Author's own calculation.

From previous table (2) which shows the relative importance weights of criterion, the researcher found that the first main important criterion product with 42%. Price 21%, place 14%, after sale services with 12% and finally promotion 8%.

Three: Establish a performance rating scale, as shown in the next table (8).

Weight is calculated by using Likert Scale, to get the rate for each criterion. Product for Aluminium rate is 0.712 but for UPVC is 0.838. Price for Aluminium is 0.740 but for UPVC is 0.679. Place for Aluminium is 0.744 but for UPVC 0.719. Promotion for Aluminium is 0.754 but for UPVC is 0.685. Finally, after sales services for Aluminium is 0.669 and for UPVC is 0.727.

Four: Calculating the competitiveness index of UPVC and Aluminium windows and doors industry

Table (8) The aggregated weighted rates.

	Product			Price			Place			Promotion			After sales service			SUM	Rank
	W	R	WR	W	R	WR	W	R	WR	W	R	WR	W	R	WR		
ALUMINUM	0.4197	**0.712**	0.299	0.2131	**0.740**	0.158	0.1381	**0.744**	0.103	0.0843	**0.754**	0.064	0.1245	**0.699**	0.087	0.552	2
UPVC	0.4197	**0.838**	0.352	0.2131	**0.679**	0.145	0.1381	**0.719**	0.099	0.0843	**0.685**	0.0578	0.1245	**0.727**	0.091	0.599	1

Source: Author's own calculation.

B 2 B empirical analysis:

The questionnaire form was conducted with the experts in order to determine the priorities of the main measures. Questionnaire's participants in this research are companies in the field in Egypt. As shown in the table (9) which illustrates questionnaire's participants and their number of questionnaires sent, received, valid and invalid.

Table (9) Questionnaire's participants and their number of questionnaires sent, received, valid and invalid.

Questionnaire's Participants	Questionnaire's numbers "sent"	Received	Valid	Invalid
Emirates NBD bank – Kafr Abdo Branch	10	6	6	0
Style Architects and Interior Design	10	5	5	0
Emelia Interior design $ Furniture	10	9	9	0
Alforat Development	15	11	10	1
MAS Engineering and Contracting S.A.E	10	4	4	0
Engineering group for Architecture and decoration	10	5	5	0
Aleatemad Company for suppliers and constructing	10	10	9	1
Egyptian group	20	15	13	2
IKON Architecture design	10	6	5	1
OMSI Group	40	30	30	0
Orascom Construction PLC	15	11	9	2
Total	**160**	**112**	**106**	**8**

Source: Author's own calculation.

As shown in the above table (4) the valid collected questionnaire percent from questionnaire's participants. The researcher has found that 96% from all collected questionnaire are valid and 4% were not valid. The next figure (2) shows the valid questionnaire percent from questionnaire's participants.

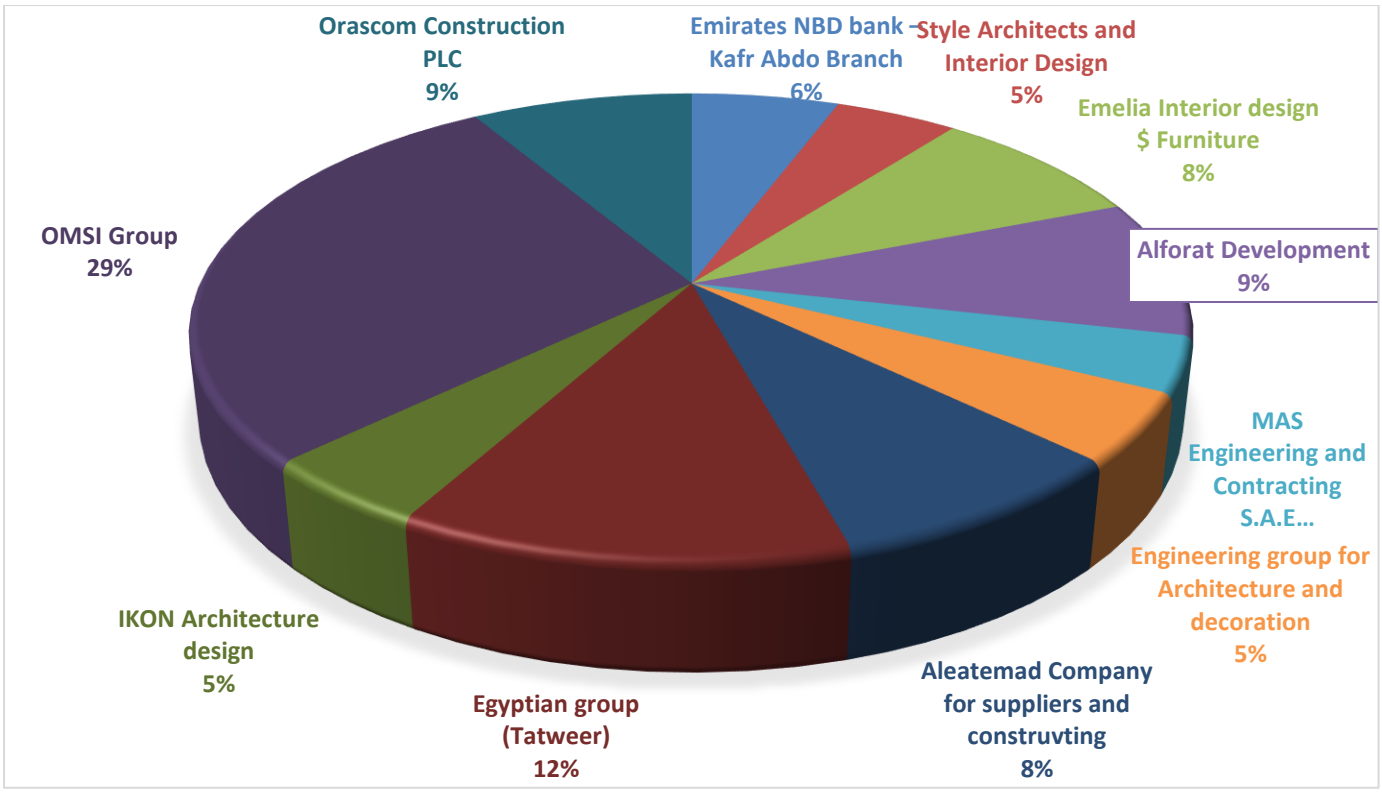

Figure (2) valid questionnaire percent from questionnaire's participants.
Source: by the researcher.

Responses were tested using Microsoft Excel and PopTools (Hood, 2010). In order to do statistical analysis for the UPVC & Aluminium windows and doors industry by applying AHP model, the researcher input the valid questionnaire forms that collected from questionnaire's participants, as shown in the previous section, into an excel sheet to run and analyse these data by using Fuzzy AHP model.

To calculate the relative importance weight of selected variable, a fuzzy pairwise questionnaire, based on triangular fuzzy numbers (Ismail, 2019). The pairwise questionnaires were given to the experts "questionnaire's participants". The data in the next table (11) are based on expert's opinion.

Perform the Consistency

There are three main steps for calculating the Consistency Ratio (CR):

1) Calculation of Eigenvalue (λmax)

λmax = 5.02236. In addition, total the five criteria should equal one as illustrated in appendix (4-1) "0.27 + 0.26 + 0.07 + 0.20 + 0.19 = 1".

2) Consistency Index (CI).

CI= 5.02236 – 5 / 5 – 1 = 0.0056

Where CI = λmax - N / N - 1 (Kousalya et al., 2012).

3) Calculation of Consistency Ratio (CR).

Where CR = CI/RI (Triantaphyllou and Mann, 1995). Random Index (RI) = 1.12, after that we calculated (CR); CR= 0.0056 / 1.12 = 0.004991.

In this context, the researcher calculated the CR in order to verify the consistency of responses; and found 0.012 as shown in the next table (10) is lower than the accepted CR 0.1. (Elgazzar, 2013). In addition, the CI result reflects increase in the validity degree of this research, because the result is reliable only when CR value is 0.1 or less.

Table (10) Consistency test.

EIGENVALUE	N	CI	RI	CR
5.02236	5	0.0056	1.12	0.004991071

Source: Author's own calculation.

After determining the Consistency Ratio, to determine the most important criteria that

Determining the weights of the each criteria

Sum of all weighted criteria should equal to one, as shown in the table (11) otherwise is wrong.

Table (11) Relative importance weights of the five main criteria.

Criterion	Priority	
Product	**27**	1
Price	**26**	2
Place	**7**	5
Promotion	**20**	3
After sales service	**19**	4
Sum	**100%**	

Source: Author's own calculation.

From the previous table (12) which assesses the weights of the selected main criterion, the researcher found that, the first main important criterion product with 27%. Price 26%, place 7%, after sale services with 19% and finally promotion 20%.

Four: Calculating the competitiveness index of UPVC and Aluminium windows and doors industry

Table (12) The aggregated weighted rates.

	Product			Price			Place			Promotion			After sales service			SUM	Rank
	W	R	WR	W	R	WR	W	R	WR	W	R	WR	W	R	WR		
ALUMINUM	0.270	0.746	0.202	0.260	0.768	0.199	0.070	0.779	0.0545	0.200	0.724	0.145	0.190	0.73	0.1394	0.54	2
UPVC	0.270	0.838	0.226	0.260	0.749	0.195	0.070	0.741	0.052	0.200	0.712	0.143	0.190	0.778	0.1477	0.57	1

Source: Author's own

Conclusion:

Although the UPVC windows and doors got many advantages compared by the Aluminium windows and doors and almost both having equal price or may be the UPVC is a little higher in its price still most of customers are buying Aluminium windows and doors So, in this paper we decide to evaluate each marketing mix factor and Measure Its effect on the Competitive advantage for each product (UPVC & Aluminium windows and doors) to explore the most affected factors on the customers buying decision So, the results of the above calculations show that

In the B2C customers group the Product rank in UPVC is higher than aluminium by 0.05288, Price rank in aluminium is higher than UPVC by 0.013, place rank in aluminium is higher than UPVC by 0.00346, and promotion rank in aluminium is higher than UPVC by 0.00581, after sales service rank in UPVC is higher than aluminium by 0.00348.

which means that the B2C customers see that the UPVC windows and doors as a material is much better than the aluminium windows and doors and the after sales service of the UPVC windows and doors companies is much better than the aluminium companies but the UPVC windows and doors is more expensive in price than the aluminium windows and doors also the place and promotion of the aluminium windows and doors companies is much better than the UPVC windows and doors companies.

In the other hand the results of the calculations of the B2B customers group we conclude that the Product rank in UPVC is higher than aluminium by 0.0248, Price rank in aluminium is higher than UPVC by 0.005, place rank in aluminium is higher than UPVC by 0.0026, and promotion rank in aluminium is higher than UPVC by 0.0023, after sales service rank in UPVC is higher than aluminium by 0.0083.

which means that the B2B customers see that the UPVC windows and doors as a material is much better than the aluminium windows and doors and the after sales service of the UPVC windows and doors companies is much better than the aluminium companies but the UPVC windows and doors is more expensive in price than the aluminium windows and doors also the place and promotion of the aluminium windows and doors companies is much better than the UPVC windows and doors companies.

From all the above we can see that the both groups of customers (B2C – B2B) decide that product and after sales service in the UPVC companies is much better than the Aluminium companies but the price, place and promotion in the Aluminium companies is better than the UPVC companies Therefor we advise the UPVC companies to revise their pricing strategies and to make more effort on their advertising plans to cope with their main competitor the aluminium companies

This research provided a framework assessing the competitiveness of position of the UPVC and aluminium windows and doors industry in Egypt. The framework captures key performance indicators to assess the UPVC and aluminium windows and doors industry in Egypt.

Reference:

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