Journal of Applied Arts & Sciences
مجلة الفنون والعلوم التطبيقية
كلية الفنون التطبيقية
جامعة دمياط Damietta University

Improving the Future Trends Forecasting Process of the Upholstery Fabrics' market

تحسين عمليات التنبؤ بالإتجاهات المستقبلية لسوق أقمشة المفروشات

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Abstract

Forecasting the demand for new products is becoming more and more difficult in many markets. A new approach to reduce the risk of the failure of new products based on the idea to integrate customers emotionally into the product design process (customer co-creation). The aim of this research is to build an innovative business model with the helping of the textiles CAD/CAM systems and the superior facilities of the e-marketing solutions, to help the upholstery designers to build their own customers perspective products in order to reduce the risk of the traditional trend forecasting uncertainty, by producing exactly what customers are really want. This process starts with an open call on to a community of hobbyists and interested customers to hand in a new product concept. Feedbacks of the hobbyists and customers have produced as a simulated fabric and 3D presentation models by the aid of the textiles CAD/CAM systems (computer aided design/ computer aided manufacturing) in order to be inspired in the web page, the internet opinion polls. If the numbers of the interested customers beat the minimum threshold, or the actual orders for the new product is quite enough, then the product are to be produced. This paper demonstrates this process with a case study of Homefashion-fabrics.com, a company in the upholstery market from Egypt. This new business model offers a dependable model of trend forecasting to help the upholstery fabrics's marketers decission makers', to access their customer's preferences efficiently.

Keywords

Market trend forecasting, customer co-creation, Upholstery fabrics, Textile CAD/CAM, E-marketing.

1.0 Introduction

Marketing is the process of planning and executing the pricing, promotion, and distribution of products, services, and ideas in order to create exchanges that satisfy both the firm and its customers. The Marketing is evolving to focus on getting the right goods and services to the right people, at the right place and time, with the right price, through the use of the right blend of promotional techniques. (Joseph F., et. al., 2003 P:5) Marketing relies on

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

sales forecasting to plan new products, compensate sales personnel, and make other key decisions. Forecasting can be defined as attempting to predict the future by using quantitative or qualitative methods. (Ravi, M. 2009 P:142) The first focused on extrapolative methods that only use the past-history of the time series to forecast ahead. (Fildes, R. et., al, 2008 P:1150) However, qualitative methods can be used to forecast for new products, when we do not enjoy a long-past history, as it leverage on the knowledge of experts. (Paolo, B. et., al, 2007 P:166) By far the major track of research on forecasting deals with the problems of new product/service forecasting. There is a great deal of evidence to support the conventional wisdom that forecasting new product/service sales and success is much more difficult than forecasting for existing products or services. Forecasting new product/service sales process is nothing but the opinion of experts, Thus the results of this exercise are just as good as the experts and the information we provided them with (e.g.. price, product description. (David A. R. et., al 2004 P:70) A trend is a relatively durable direction, style, or preference in consumer behavior that results in a prolonged market movement in one general direction. Although trends are most often with fashion, they play an important role in the conception, design, marketing, and consumption of all consumer goods and services. (Karin, T. 2008 P407) Trends often start as fads (and a fad may be the resurgence of a once fashionable style). A fad is a style of short duration that could be represented by an inverted "U" on a graph. A trend, however, is tracked on a graph by a typical "S" curve. Rather than sinking into quick oblivion, a trend is sustained up on reaching saturation. Identifying, understanding, and predicting trends is important for a number of industries, particularly fashion. Trend spotting and trend forecasting are conducted using techniques and processes from psychology, the social sciences, in order to tap into sustained currents of thinking , feeling, and behavior. As these techniques are further developed, companies are increasingly able to not only capitalize on the shifting of styles and tastes across time, but also direct them. (Karin, T. 2008 P408). Developments in computer technology enable textile designers to accomplish more design work in shorter time frames. Under the accelerated trend cycles for fashion and home furnishing industries, textile designers can respond rapidly to market needs and design alterations, also create original products, and respond rapidly to market trends, while performing multi-tasking in diversified design requirements. Before existing Internet information technology had mass appeal, the main source of trend research came from printed hard copy, which was published by trend forecasting companies. Today, some of the more elite textile design companies also take advantage of this ubiquitous access to Internet technology by researching style trends through blogs, Twitter, and social network sites. (Ujiie, H. 2011 P:249)

1.1 Research problem

When a new product is in the concept phase, a heavy reliance is usually placed on intentions surveys. Intentions to purchase new products are complicated because potential customers may not be sufficiently familiar with the proposed product and because the various features of the product affect one another, such as (Pattern, textures and colors), so that the traditional forecasting methods may be not appropriate to forecast accurately the right future trends for the upholstery fabrics, so that, the main question of this research is: Is there any new approach could be appropriate to forecast accurately

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

the right future trends for the new upholstery fabrics products, in order to reduce the failure risk of the new products?

1.2 Objective

The aim of this research is to build an innovative business model with the helping of the textiles CAD/CAM systems and the superior facilities of the e-marketing solutions, to help the upholstery designers to build their own customers perspective products in order to reduce the risk of the traditional trend forecasting uncertainty, by producing exactly what customers are really want.

1.3 Hypothesis

Textiles CAD/CAM software and E-commerce solutions could help the upholstery designers to identify the customers' needs perfectly in order to forecast their future demands.

2.0 Research methodology

This research is going to describe a methodology for a new approach, which could significantly improve forecasts for new products and reduce markdowns that result from excessive inventory and lost margins by resolving the uncertainty of the traditional forcasting methods.

2.1 Creating seasonal forecasts for the entire set of upholstery fabric products: this process is based on extrapolative forecasting method that use the past-history of the time series to forecast ahead. The following steps is going to test the ability of the time series analysis forecast method using the simple linear regression to forecast the sales for a set of upholstery fabrics products.

2.1.1 Identifing a set of products which have be tested: The set of the products which produced by the manufacturer had been assembled. The manufacturer is producing an eight products (Diamonds, Dew, Azalea, Pansy, Pansy match, Tulip, plain tafta, plain Chenille) contains three categories divided by colors (Body rose, Cream yellow and Camel yellow), by material (Chenille, Tafta, Silk and linen) and by Pattern (Plain, Small pattern, Stripes, Damask, Floral and Geometrical). Many of these products might share one or more feature like price, color, materials and design pattern. Three products of the upholstery fabrics from the origin of an eight products which produced by the manufacture of our case study (HF) have been selected.

2.1.2 Specifing the time interval for the sales history of the comparable products. The manufacture divide the year into four seasons: winter, spring, summer and fall. The first month of the winter season is the month of December, and the first month of the fall season is the month of September. The sales history of comparable products that were sold in a prior seasons of the years 2011, 2012 and 2013 has assembled assembled, in order to forecast the sales of the same products at the same seasons of the year 2014.

(ISSN 2537-1061) (Print)
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2.1.3 Time series analysis forecasting method, using the simple linear regression:

Table (1) Product (Diamonds) Trend forecasting

			Simple Linear Regression Forecasting								Forecast Evaluation			
			Demand		Baseline	Y_t/CMA	Seasonal Factor	Deseasonalize	Trend	Forecast	ME	MAE	MAPE	Sq.Error
t	Year	Season	Y_t	MA(4)	CMA(4)	$S_t.I_t$	S_t	Y_t/S_t	T_t	S_t*T_t	Y_t-T_t	$\|Y_t-T_t\|$	$\|Y_t-T_t\|/Y_t$	$(Y_t-T_t)^2/Y_t^2$
1	2011	Winter	1700				0.54	3148	3469	1873				
2		Spring	4700				1.36	3456	3520	4787				
3		Summer	5500	3967	4067	1.35	1.35	4074	3570	4820	680	680	0.12	0.02
4		Fall	2300	4167	3675	0.63	0.67	3433	3621	2426	-126	126	0.05	0.00
5	2012	Winter	1750	3183	3067	0.57	0.54	3241	3672	1983	-233	233	0.13	0.02
6		Spring	4800	2950	3533	1.36	1.36	3529	3722	5062	-262	262	0.05	0.00
7		Summer	5800	4117	4292	1.35	1.35	4296	3773	5093	707	707	0.12	0.01
8		Fall	2800	4467	3953	0.71	0.67	4179	3823	2562	238	238	0.09	0.01
9	2013	Winter	1720	3440	3340	0.51	0.54	3185	3874	2092	-372	372	0.22	0.05
10		Spring	5200	3240	3807	1.37	1.36	3824	3925	5338	-138	138	0.03	0.00
11		Summer	6200	4373			1.35	4593	3975	5367	833	833	0.13	0.02
12		Fall	2500				0.67	3731	4026	2697	-197	197	0.08	0.01
13	2014	Winter	1800				0.54	3333	4076	2201	-401	401	0.22	0.05
14		Spring	4950				1.36	3640	4127	5613	-663	663	0.13	0.02
15		Summer	5390				1.35	3993	4178	5640	-250	250	0.05	0.00
16		Fall	2790				0.67	4164	4228	2833	-43	43	0.02	0.00
Total			14930							16287				
			Intercept	Slope	Q	1	2	3	4					
			3418.7	50.6	S_t	0.54	1.36	1.35	0.67					

Table (1) Demonstrates the collected data from the past history sales for the product (Diamonds) for the years 2011, 2012 and 2013. The sales forecast of the product (Diamonds) for the year 2014, should be about 16500 meter, divided according to the seasonal factor trend, to 2200 meter/winter, 5600 m/spring, 5600 m/summer and finally 2900 m/ fall, so that, the total production of this product at the next year should be about 16500 meter.

Table (2) Product (Diamonds) 2014 Total Production/m

Product (Diamonds) 2014 Total Production/meter										
	Product Total Sesonal Sales			Total Prod./m	Total sales/m	Colour			Material	Pattern
Month	2011	2012	2013	2014	2014	BodyRose	Cream Yellow	Camel Yellow	Linen	Geometrical
Dec	800	800	850	650	650	250	200	200	650	650
Jan	500	450	600	650	550	200	250	200	550	550
Feb	400	500	270	650	600	150	200	300	600	600
Total	1700	1750	1720	1950	1800	600	650	700	1800	1800
Mar	1200	1400	1600	2100	1940	600	700	700	1940	1940
Apr	1500	1800	1500	1900	1760	700	500	600	1760	1760
May	2000	1600	2100	1350	1250	400	400	450	1250	1250
Total	4700	4800	5200	5350	4950	1700	1600	1750	4950	4950
Jun	1700	1200	1500	1700	1640	700	600	600	1640	1640
Jul	1800	2400	2600	2000	1850	1000	700	700	1850	1850
Aug	2000	2200	2100	1900	1900	800	800	700	1900	1900
Total	5500	5800	6200	5600	5390	2500	2100	2000	5390	5390
Sep	1000	1100	600	800	670	300	400	200	670	670
Oct	750	900	800	1150	1000	350	300	500	1000	1000
Nov	550	800	1100	1350	1120	400	500	450	1120	1120
Total	2300	2800	2500	3300	2790	1050	1200	1150	2790	2790
Total/Y	14200	15150	15620	16200	14930	5850	5550	5600	14930	14930

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

Table (2) shows that, the actual total production for the product (Diamonds) at the year 2014 is 16200 meter, and this is approximately match the forecast, which is equal 16500 meter/year, also the table illustrate the divided produced quantity of each color of this product. Table (3) Demonstrates the difference between the actual total production and the actual total sales for the year 2014 to the same product (Diamonds) divided by colors.

Table (3) Product (Diamonds) 2014 Total Stock

Item	Colour									Material			Pattern		
	BodyRose			Cream Yellow			Camel Yellow			Linen			Geometrical		
Month	Prod./ M	Sales /M	Stock /M	Prod./ M	Sales /M	Stock/ M	Prod./ M	Sales /M	Stoc k/M	Prod./ M	Sales/ M	Stock /M	Prod./ M	Sales/M	Stock/M
Dec	250	250	0	200	200	0	200	200	0	650	650	0	650	650	0
Jan	200	200	0	250	150	100	200	200	0	650	550	100	650	550	100
Feb	150	150	0	200	150	50	300	300	0	650	600	50	650	600	50
Total	600	600	0	650	500	150	700	700	0	1950	1800	150	1950	1800	150
Mar	700	700	0	700	580	120	700	660	40	2100	1940	160	2100	1940	160
Apr	700	660	40	500	500	0	700	600	100	1900	1760	140	1900	1760	140
May	500	400	100	400	400	0	450	450	0	1350	1250	100	1350	1250	100
Total	1900	1760	140	1600	1480	120	1850	1710	140	5350	4950	400	5350	4950	400
Jun	700	740	-40	500	400	100	500	500	0	1700	1640	60	1700	1640	60
Jul	800	800	0	600	500	100	600	550	50	2000	1850	150	2000	1850	150
Aug	600	600	0	700	700	0	600	600	0	1900	1900	0	1900	1900	0
Total	2100	2140	-40	1800	1600	200	1700	1650	50	5600	5390	210	5600	5390	210
Sep	300	300	0	200	120	80	300	250	50	800	670	130	800	670	130
Oct	350	350	0	200	100	100	600	550	50	1150	1000	150	1150	1000	150
Nov	400	350	50	400	220	180	550	550	0	1350	1120	230	1350	1120	230
Total	1050	1000	50	800	440	360	1450	1350	100	3300	2790	510	3300	2790	510
Total	5650	5500	150	4850	4020	830	5700	5410	290	16200	14930	1270	16200	14930	1270

The difference between this two variables is equal the actual total stock of the product (Diamonds) divided by colors. Figure (1) illustrates this difference graphically in order to define the actual problem of this forecasting process.

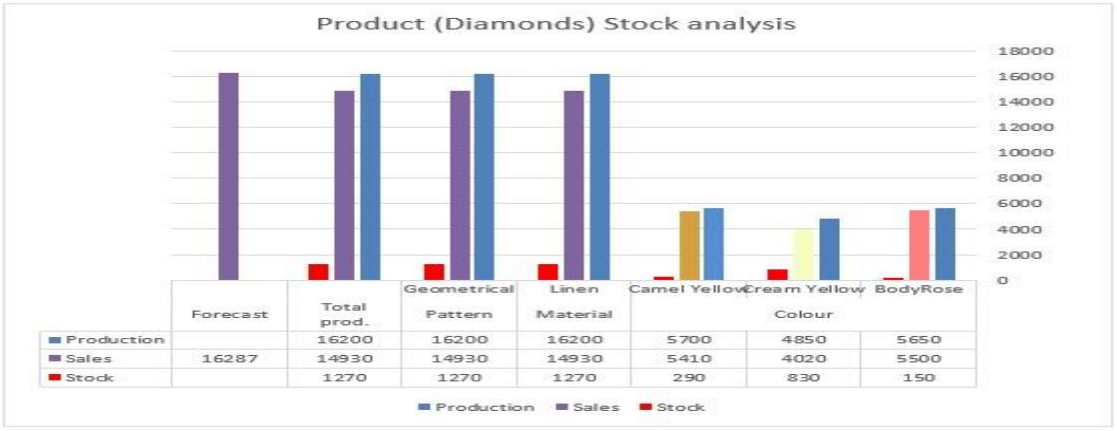

Figure (1) Product (Diamonds) Stock analysis

Figure (1) Demonstrates that the actual sales approximately equal the actual total production and forecast, which is mean that the forecast method is about to hit the right target. The chart also hits the right problem, which is truly potentials in the product stocks'. The graph shows that the cream yellow product has the biggest quantity of the product (Diamonds) stocks' with 830 m/year, which is not an acceptable stock quantities, while Body rose and camel yellow have an acceptable quantities of stock with 150 and 290 m/year. The next two figures will

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

demonstrate another two stock's problems with another two different products.

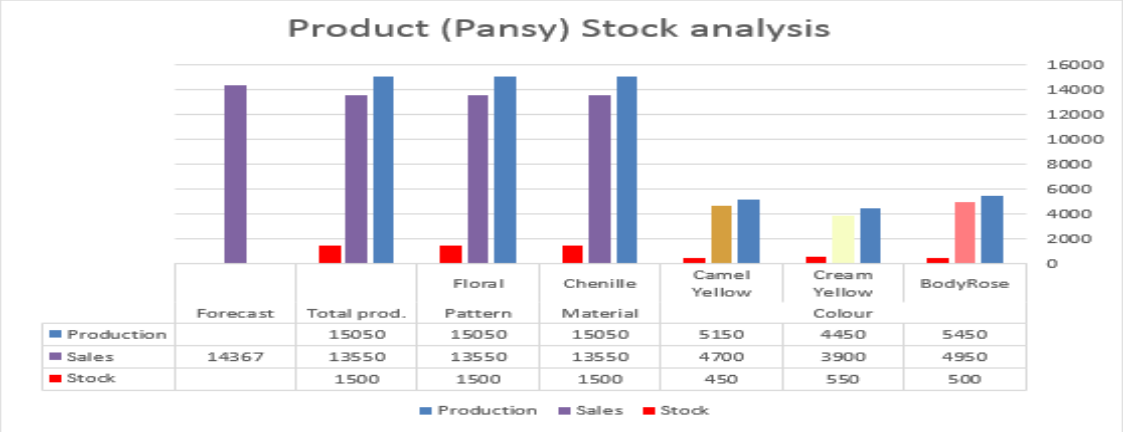

Figure (2) Product (Pansy) Stock analysis

Figure (2) demonstrates that the actual sales extremely far from the actual total production, while it is approximately equal the actual forecast. Actually, this means that the forecast is good. However, there is an unpredictable problem that happens, and the chart shows that the problem is the significant decreasing in the total product (Pansy) sales' with all its three colors, which is mean that the problem is not coming from colors, but actually is coming from one of the other two variables (material or Pattern). With coming back to the sales data for the other items, the results illustrate that the same material achieved a great quantity of sales, so that it is clear that the problem is not coming from the material, and lies potentially in the pattern of this item.

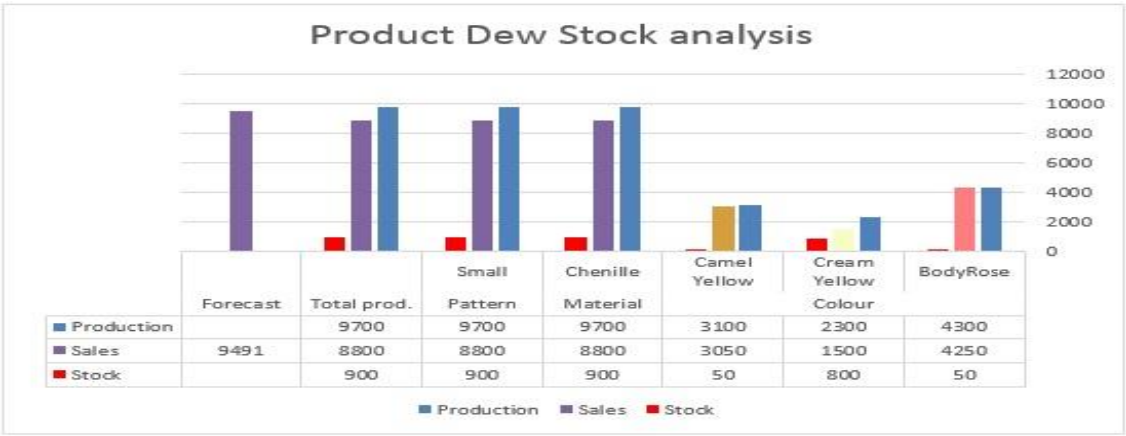

Figure (3) Product (Dew) Stock analysis

Figure (3) demonstrates the last case study in this research paper. It is clear that, the data is emphasizes on the first case of the product (diamonds) with the color (Cream yellow). whereas, the actual total sales approximately equal the actual total production and forecast, while the high level of stock is coming from the color (Cream yellow), which is mean that we have a great problem with this color, so that, we have to find another color to replace this one. Many other same cases had been already studied in this research, however, it will not be represented in this

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

research paper, some of them finding's demonstrates that we have a problem with the material and other illustrates that the problem is actually potential in the pattern.

2.2 Expert's opinions:

In this case will be the company customers') and their perspective's, to hand in the new products concepts. A questionnaire about the next seasons for the year 2015 items had been sent to the customers contains all the fabric's design variables like (colors, materials and patterns) , to select their preferences', and the results will be demonstrated in the chart in figure (4).

Customer	Customer preferences															
Product	Color						Material				Pattern					
	Body Rose	Cream Yellow	Camel Yellow	Lemon Green	Turquoise	Wine Red	Chenille	Linen	Silk	Tafta	Stripes	Plain	Small	Geometrical	Floral	damask
Total	22	12	13	19	22	16	17	24	20	18	25	22	21	22	22	14

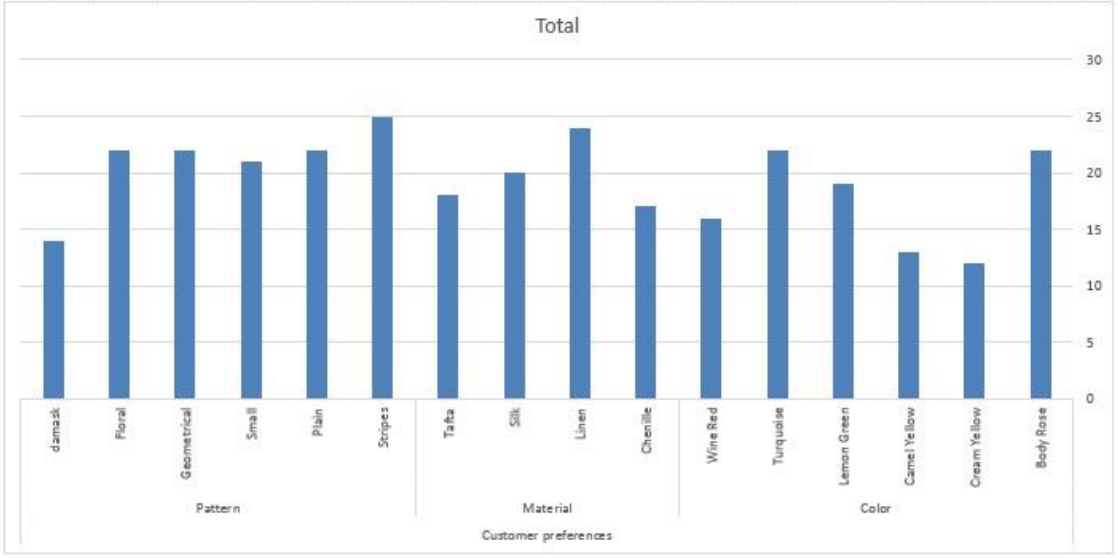

Figure (4) Customer's Product preferences

The chart in figure (4) is about to disscuss the opinions of the total of 30 customers of our expert's opinions of the company, to get their opinions about the old and the new features of the new products that will be produced for the next seasons for the year 2015. At the first glance, it is clear that there are many old features of the products will be available in the year 2015 like the color (Body rose), Materials like (Lenin and chenille) and patterns like (Geometrical, floral and stripes). However, many of these features should be replaced with same categories of features like the color (Cream Yellow), as it should be replaced with other set of colors, in order to improve the product features to increase the sales in the next seasons of the year 2015. It is clear from the chart that the trend colors to the year 2015 according of the expert's opinions is (Body rose, Turquoise, wine red and Lemon green), while the low trend colors is (cream yellow and camel yellow). The trend Materials of the year 2015 is (Lenin and silk) followed by (Tafta and Chenille), Also its clear that the most trendy patterns is (stripes), followed by (plain, geometrical and floral), while the low trend pattern will be (Damask).

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

2.3 The third step is to be assure that the proposed items will be actually the trend items for the next seasons of the year 2015 before starting the production. This step will examined in the next four steps.

2.3.1 Putting the right design ideas from the perspective of the expert opinnions': This step has to be done by the aid of the one of the most famous Textile CAD/CAM software (Nedgraphics - Texcell). Figure (5) Illustrates the design of the product (**Dahlia**) in its concept phase, which cannot be considered a good agent for the experts to judge the quality of the design idea, so that, this concept design will be converted to a simulated fabric.

Figure (5) Product (Dahlia) Design Pattern

2.3.2 Producing the fabric simulation:

The target of this step is to produce a virtual fabric, which is approximately simulate the real fabric to collect orders before starting the production. The required weaving structures, the warp and weft materials, count system, densities, sequences and colors, had been chosen in order to produce the right simulation of the required fabric.

(ISSN 2537-1061) (Print)
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Figure (6) Product (Dahlia) Body Rose simulation

Figure (6) shows a swatch of the product (Dahlia) Body rose simulation.

Figure (7) Product (Dahlia) Cream yellow simulation

Figure (7) shows a swatch of the product (Dahlia) Cream yellow simulation.

Figure (8) Product (Dahlia) Wine Red simulation

Figure (8) shows a swatch of the product (Dahlia) Wine red simulation.

Figure (9) Product (Dahlia) Camel yellow simulation

Figure (9) shows a swatch of the product (Dahlia) Camel yellow simulation.

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Figure (10) Product (Dahlia) Lemon green simulation

Figure (10) shows a swatch of the product (Dahlia) Lemon green simulation.

Figure (11) Product (Dahlia) Turquoise simulation

Figure (11) Shows a swatch of the product (Dahlia) Turquoise simulation.

It is clear that the fabric simulation is can be considered the first step to help the customer to take his right choice.

2.3.3 Producing the 3D presentation model for the simulated fabric:

The target of this step is to hand the customer to select his fabric's features (color, material and pattern), according to his apartment's interior style to Be sure that he already took the right choice. The following Figures will demostrate the 3D presentation models for the sample simulated fabric.

Figure (12) Product (Dahlia) Body Rose 3D Model

Figure (12) Shows the product (Dahlia) Body Rose 3D Model, and the color way for this product will be represented consequently next.

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Figure (13) Product (Dahlia) Cream yellow 3D Model

Figure (13) shows the 3D Model of the product (Dahlia) Cream yellow, with Turquoise matching small pattern fabric For the sofa seat, stripes and plain fabrics for pillows.

Figure (14) Product (Dahlia) Lemon green 3D Model

Figure (14) shows the 3D Model of the product (Dahlia) Lemon green with Lemon Green matching Plain pattern fabric for the sofa seat, stripes and plain fabrics for the pillows.

Figure (15) Product (Dahlia) Wine Red 3D Model

Figure (15) shows the 3D Model of the product (Dahlia) Wine Red with Wine Red matching small pattern fabric for the sofa seat and Wine Red rug.

(ISSN 2537-1061) (Print)
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Figure (16) Product (Dahlia) Camel yellow 3D Model

Figure (16) shows the 3D Model of the product (Dahlia) camel yellow with camel yellow matching small pattern fabric for the sofa seat and Oriental rug.

Figure (17) Product (Dahlia) Turquoise 3D Model

Figure (17) shows the 3D Model of the product (Dahlia) Turquoise with Turquoise matching small pattern fabric for the sofa seat and Turquoise rug.

By finishing the 3D presentation models, the data needed for taking the right decision about what should he produce from the vast available products collections', ready to be collected, actualy without no risk because all products are virtualy produced without any costs.

4.0 Feedback's data collection:

This is the last step that hands in taking the the right production decision. It is start from uploading all the virtual items collection to the company web site in order to get the feedbacks from the customers and the hoppystis. Note: all items collection can be found in: www.homefashion-fabrics.com. From the feedbacks, the following information could be infered:

Which items/products' web pages has a customer visited?

Which items/products' has a customer wishlisted?

Which items/products' has a customer bought?

How many meters of items/ products' has a customer bought?

What are customers' purchase behaviour patterns?

What are the sales patterns in terms of various perspectives such as products /items, regions and time (weekly, monthly, quarterly, yearly and seasonally), and so on?

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

The following charts will demonstrate the results of the data collected:

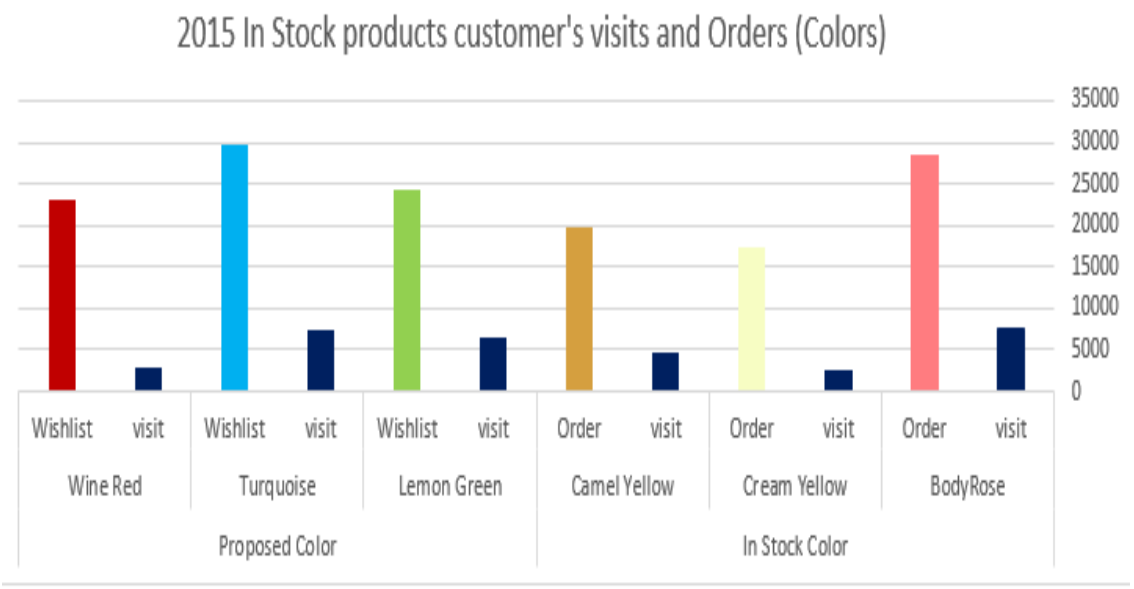

Figure (18) 2015 In Stock products 2015 customers visits and Orders (Colors)

The chart in figure (18) demonstrates the year 2015 In Stock products customer visits and Orders/(Colors), for three in-stock colors and three other proposed colors. It is clear that (Body rose) is the most preferable color in the in-stock three colors, because it has the biggest amout of sales, while cream yellow is the smallest one. It can be infered from this that the color (body rose) will has a good chance for sales in the next year, while the color positively to the amount of sales or wishlist. The followin two figures will demonstrate the same facts with the other two design variables (materials and patterns).

(cream yellow) may nominated to be away from the next year color collections'. On the other hand, the findings of the new proposed colors illustrate that the color (Turquoise) has the biggest chance of sales next year, because it has the biggest amout of visits and wishlist, while the color (wine red) on contrary. Also, the chart demostrates another fact, that the amount of customer visits relative

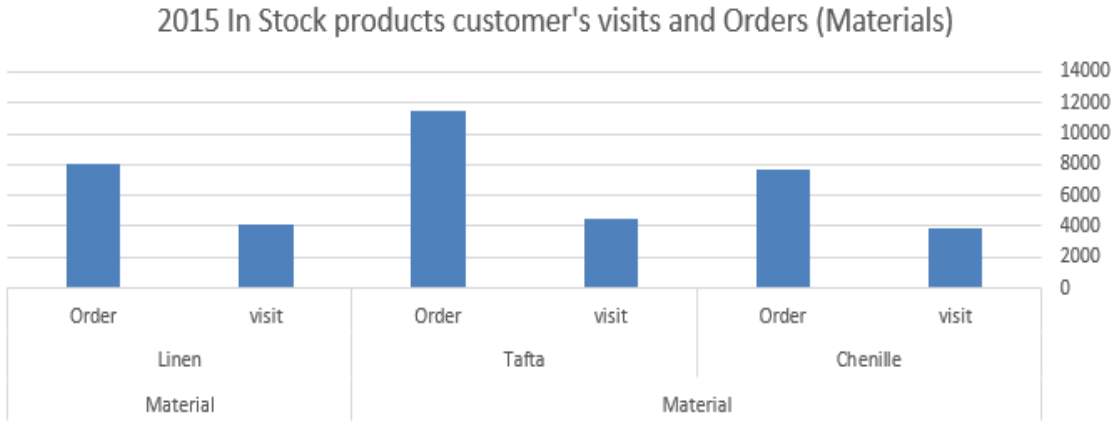

Figure (19) 2015 In Stock products 2015 customers visits and Orders (Materials)

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

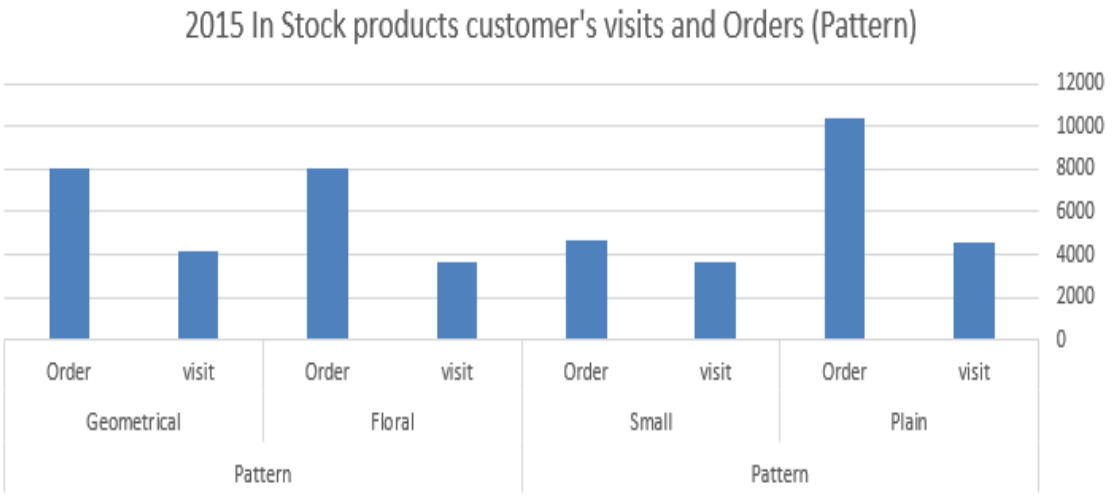

Figure (20) 2015 In Stock products 2015 customers visits and Orders (Patterns)

The following step is about to collect the data from customers about their opinion's of the new proposed items according to their previously defined preferances. These data is clear from their total amount of visits and wishlist. The followig table demonstrates this findings:

Table (4) 2015 Proposed Items customer's visits and wishlist (Colors)

Item		Proposed Item											
		Proposed Color						Proposed Color					
		BodyRose		Cream Yellow		Camel Yellow		Lemon Green		Turquoise		Wine Red	
No.	Name	visit	Wishlist	visit	Wishlist	visit	Wishlist	visit	Wishlist	visit	Wishlist	visit	Wishlist
cXm2p4Geo	Bubbly	250	1300	170	800	250	900	1000	4700	900	4800	700	3500
cXm2p4Geo	Pearls	100	900	120	620	100	800	800	3200	1000	3700	800	2400
cXm2p3flr	Daisy	220	1300	180	850	220	900	1100	4300	1100	4500	1100	2000
cXm2p3flr	Garden Phlox	250	1100	230	950	250	950	700	3200	800	3350	900	3100
cXm2p3flr	Dahlia	170	1000	150	1000	170	700	700	2000	800	1800	450	2200
CXm2p2dsk	Mylena	230	1200	180	850	230	1200	900	3400	930	3800	750	3100
cXm1p7str	Stripes Chenille	390	1100	270	800	390	750	1200	3900	900	4100	850	3300
cXm2p7str	Stripes Linen	450	1250	320	850	450	900	1250	3900	920	4200	850	4000
Total new		2060	9150	1620	6720	2060	7100	7650	28600	7350	30250	6400	23600
Average		258	1144	203	840	257.5	887.5	956.3	3575	918.8	3781	800	2950

Table (4) demonstrates the total amount of visits and wishlisted items/colors of all proposed items according to the customers's preferances, and Figure (21) illustrates the findings graphicly

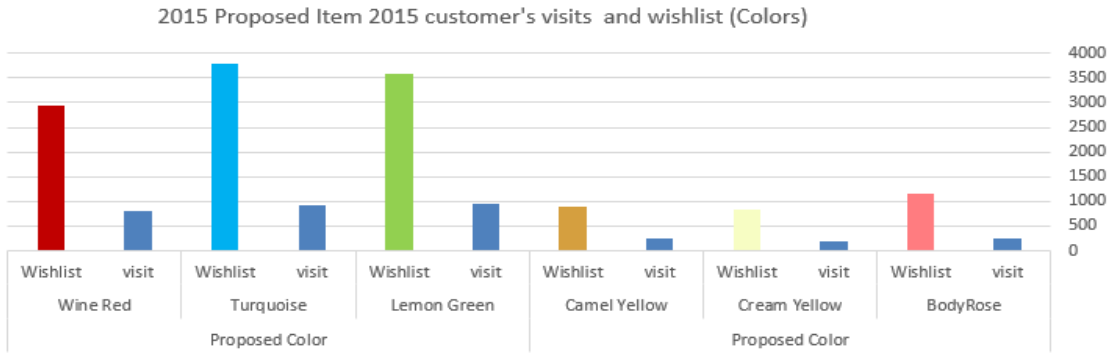

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Figure (21) 2015 Proposed Items customer's visits and wishlist /(Colors).

(ISSN 2537-1061) (Print)
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It is clear from the chart, that the most color trend for the next year is (Turquoise and Lemon) green, followed by (wine red and body rose), while it is very recommended to remove (cream yellow and camel yellow) from the production plan. The following figures and tables demonstrate the same findings with (materials and patterns).

Table (5) 2015 Proposed Item 2015 customer's visits and wishlist (Materials)

Item		Proposed Item							
		Material				Material			
		Chenille		Tafta		Silk		Linen	
No.	Name	visit	Wishlist	visit	Wishlist	visit	Wishlist	visit	Wishlist
cXm2p4Geo	Bubbly							3270	16000
cXm2p4Geo	Pearls							2920	11620
cXm2p3flr	Daisy							3920	13850
cXm2p3flr	Garden Phlox			3130	12650				
cXm2p3flr	Dahlia							2440	8700
CXm2p2dsk	Mylena	3220	13550						
cXm1p7str	Stripes Chenille	4000	13950						
cXm2p7str	Stripes Linen							4240	15100
Total new		7220	27500	3130	12650			16790	65270
Average		3610	13750	3130	12650			3358	13054

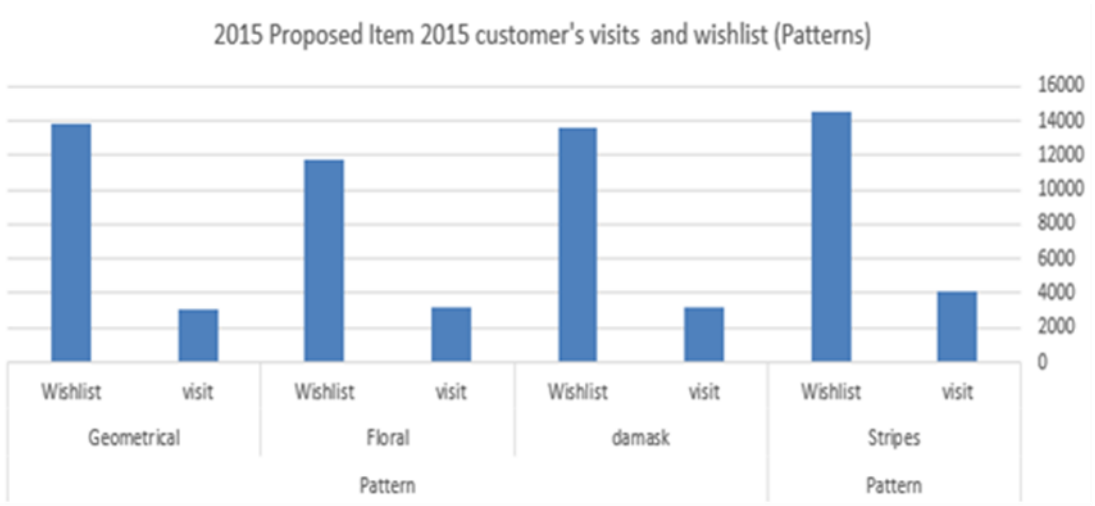

Figure (22) 2015 Proposed Item 2015 customer's visits and wishlist (Materials)

It is clear from the chart that the most trendy material is chenille followed by Linen, and the smallest chance is for Tafta.

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

Table (6) 2015 Proposed Items customer's visits and wishlist (Patterns)

Item		Proposed Item											
		Pattern						Pattern					
		Plain		Small		Stripes		damask		Floral		Geometrical	
No.	Name	visit	Wishlist	visit	Wishlist	visit	Wishlist	visit	Wishlist	visit	Wishlist	visit	Wishlist
cXm2p4Geo	Bubbly											3270	16000
cXm2p4Geo	Pearls											2920	11620
cXm2p3flr	Daisy									3920	13850		
cXm2p3flr	Garden Phlox									3130	12650		
cXm2p3flr	Dahlia									2440	8700		
CXm2p2dsk	Mylena							3220	13550				
cXm1p7str	Stripes Chenille					4000	13950						
cXm2p7str	Stripes Linen					4240	15100						
Total new		0	0	0	0	8240	29050	3220	13550	9490	35200	6190	27620
Average		0	0	0	0	4120	14525	3220	13550	3163	11733	3095	13810

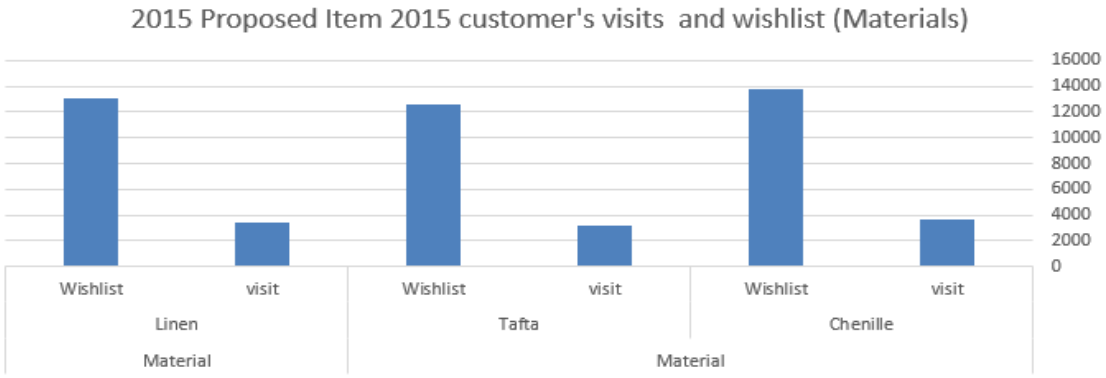

Figure (23) 2015 Proposed Item 2015 customer's visits and wishlist (Patterns)

The chart in figure (23) illustrates that the most trendy pattern next year is stripes, followed by Geometrical and the lowest chance is for the floral patterns. Also it can be infered that there is a positive relation between the avreage amount of customer's visits to items and their wishlist items'.

Finally, the most important step is about to compare the year 2015 total amount of the proposed items wishlisted and the total amount of its actual sales in the year 2016, in order to judge the abilities of the textile CAD/CAM software and the e-marketing solutions to forecast the trends of the upholstery fabrics to the next year. The following tables and charts demostrate these findings:

(ISSN 2537-1061) (Print)
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Table (7) 2016 Proposed Items customer's visits and Orders (Colors)

Item		Proposed Item											
		Color						Color					
		BodyRose		Cream Yellow		Camel Yellow		Lemon Green		Turquoise		Wine Red	
No.	Name	Wishlist	Order	Wishlist	Order	Wishlist	Order	Wishlist	Order	Wishlist	Order	Wishlist	Order
cXm2p4Geo	Daiamonds		2140		770		1000	3000	2850	4000	4250	2500	2650
cXm1p5spa	Dew		1450		450		600	2200	2340	3200	2900	1200	1300
cXm1p3flr	Azalea		2350		900		1100	2000	2120	4500	4650	3600	2450
cXm1p3flr	Pansy		1800		1360		1700	3700	2630	3700	3900	3200	2870
cXm1p3flr	Pansy match		1120		980		760	2200	2420	1800	2150	1800	2000
cXm4p3flr	Tulip		1290		1240		1240	3600	3720	4200	4500	3600	2460
cXm1p6pln	Plain Tafta		2420		1350		1530	3900	4230	4700	4600	4000	3890
cXm1p6pln	Plain chenille		1230		1200		1640	3700	3850	3700	3500	3200	3400
cXm2p4Geo	Bubbly	1300	1450	800	870	900	1100	4700	4850	4800	4620	3500	3660
cXm2p4Geo	Pearls	900	950	620	740	800	890	3200	2920	3700	3960	2400	2900
cXm2p3flr	Daisy	1300	1240	850	1000	900	840	4300	4630	4500	4320	2000	2200
cXm2p3flr	Garden Phlox	1100	1220	950	880	950	1200	3200	3450	3350	3500	3100	3350
cXm2p3flr	Dahlia	1000	1130	1000	1250	700	820	2000	2300	1800	2130	2200	2450
CXm2p2dsk	Mylena	1200	1320	850	1150	1200	1320	3400	3560	3800	3900	3100	2960
cXm1p7str	Stripes Chenille	1100	1200	800	930	750	700	3900	4230	4100	4270	3300	3430
cXm2p7str	Stripes Linen	1250	1330	850	940	900	1050	3900	3780	4200	3900	4000	4340
Total new		9150	23640	6720	16010	7100	17490	28600	29720	30250	30600	23600	25290
Average		1144	1478	840	1001	887.5	1093	1788	1858	1891	1913	1475	1581

Table (7) illustrates the avearge total amoun of the customer's visits to all produced items at the year (2015) in comparison to the actual sales of these items for the next year (2016), so that, the decission makers' can decide whether he can depend on this method to forecast trends for the following years or not. Figure (24) illustrates the findings.

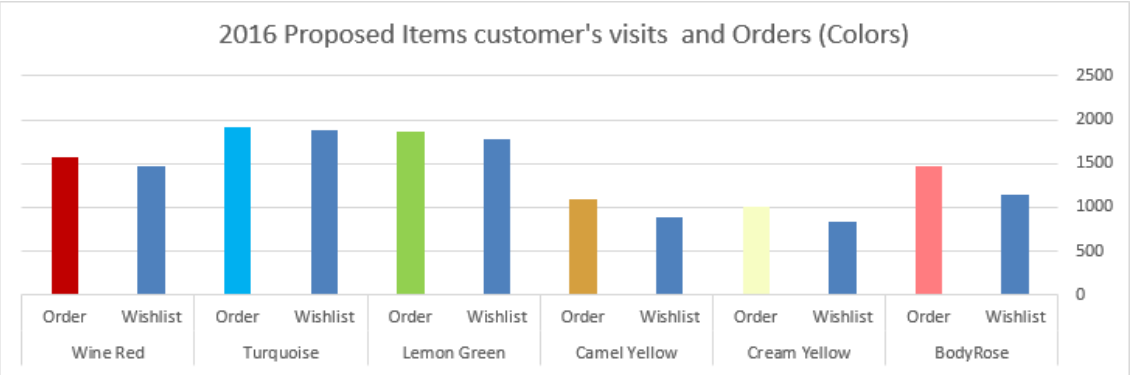

Figure (24) 2015 Proposed Item 2015 customer's wishlist and 2016 orders (colors)

It is clear from the chart that the average amout of total wishlisted items for the year 2015 is approximately equal the average amount of sales for the year 2016. However, the average amout of the actual sales became a little bit more, because of the new customer's orders that the company gain them as result of the suprior features of the e-marketing solutions. The following two charts in figures (25) and (26) demonstrae the same findings for the others two variables (Materials and patterns).

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

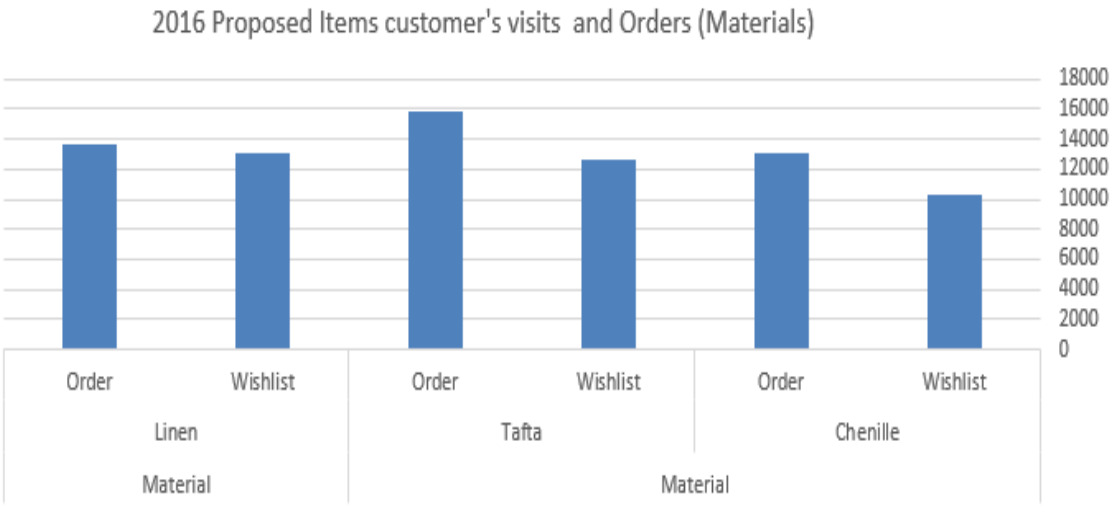

Figure (25) 2015 Proposed Item 2015 customer's wishlist and 2016 orders (Materials)

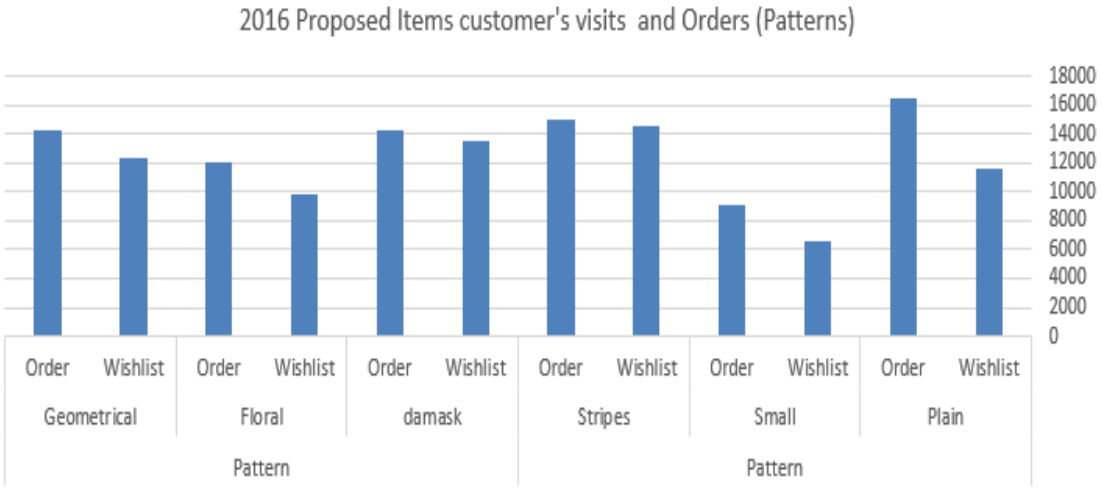

Figure (26) 2015 Proposed Item 2015 customer's wishlist and 2016 orders (Patterns)

Discussions & Conclusions

The integration between Textille CAD/CAM and E-Marketing solutions offers an innovative way of generating new business solutions for forecasting the trends of the new products of the upholstery fabrics. The new business model Reduces the uncertinety of the new product future trend forecasting methods that uses only judgemetal forecasting by expert's opinions, also, Reduces the risk of the failure of new products based on the idea to integrate customers emotionally into the product design process. Developments in computer technology, and using Textile's CAD/CAM solutions, enable textile designers to accomplish more design work in shorter time frames, so that, they can response rapidly to market needs and design alterations, generating original products, and respond rapidly to market trends. Finally, we can say that this new business model offers a dependable model of trend forecasting to help the upholstery fabrics's marketers decission makers', to access their customer's preferences efficiently.

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

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(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)

ملخص:

تزادد صعوبة عملية التنبؤ بمعدلات الطلب على المنتجات الجديدة يوما بعد يوم. يوضح هذا البحث نموذجا لمدخلا جديدا يهدف إلي محاولة التقليل من مخاطرالإخفاقات التسويقية للمنتجات الجديدة، بالإعتماد على فكرة أساسيه تتمثل في إشراك المستهلك وجدانيا في عملية تصميم تلك المنتجات. ويهدف البحث إلي بناء نموذج عملي مبتكر يحاول المزج بين أستخدام برامج تصميم وتصنيع أقمشة المفروشات بمساعدة الحاسب الألى، إلى جانب الحلول المتعددة لأنظمة التسويق الإلكترونى ، لمساعدة مصممي المفروشات في توفير مجموعة كبيرة من المنتجات التي تلبى احتياجات العملاء من حيث (اللون، الخامة و الوحدات الزخرفية). تبدأ هذه العملية بعمل مجموعة من إستطلاعات الرأي لمجتمي رجال الأعمال والهواة للمشاركة بإبداء أرائهم فيما يخص تفضيلاتهم المطلوب توافرها فيما سوف يتم طرحه من منتجات جديدة، ويلى عملية تحديد هذه التفضيلات، عملية صياغتها في مجموعة من نماذج المحاكاة والعرض الفراغى (ثلاثي الأبعاد) و التي بدورها تساعد المستهلكين في تحديد مدي تحقيق هذه المنتجات للأغراض الوظيفية والجمالية المطلوبة، وذلك بمساعدة برامج تصميم وتصنيع المنسوجات بمساعدة الحاسب الألى، تمهيدا لرفع هذه النماذج على الموقع الإلكترونى الخاص بالشركة على الشبكة الدولية للمعلومات، حيث يتم جمع المعلومات التي تفيد بمدي إستجابة وتفاعل العملاء والهواة مع هذه المنتجات. و في حال تجاوز معدلات الطلب علي تلك المنتجات للحد الأدنى للإنتاج، تبدأ على الفور عملية الإنتاج الفعلية. يقوم البحث بعمل دراسة حالة لأحد شركات تصنيع المفروشات المصرية "هوم فاشون" والموقع الإلكترونى الخاص بالشركة هو-www.homefashion fabrics.com . وهي إحدى شركات إنتاج أقمشة المفروشات في مصر. و قد تبين من النتائج أن النموذج العملى المقدم من خلال البحث نموذج يمكن الإعتماد عليه إلى حد كبير في عمليات التنبؤ بالإتجاهات المستقبلية لسوق أقمشة المفروشات، إذ يمكنه أن يساعد مسوقى أقمشة المفروشات في الوصول إلى تفضيلات العملاء المستقبلية بكفاءة مقبولة.

(ISSN 2537-1061) (Print)
(ISSN 2537-107X) (Online)