

# Uncertain Supply Chain Management

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## An exploration study to find the effect of new advertisement techniques on export based product development: A case study of mobile devices

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### ABSTRACT

During the past few years, new methods of advertisements such as internet, email services, etc. have created new opportunities to promote products and services. The cost of an email message is normally negligible but the outcome could be significant. This paper presents an empirical investigation to find the effect of new advertisement techniques on export based product development in a case study of mobile devices. The proposed study designs a questionnaire in Likert scale consists of 29 questions, distributes it among 150 exporters of mobile devices in Iran. Cronbach alpha is calculated as 0.826. In addition, Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Approx. Chi-Square are 0.790 and 1023.3, respectively. Based on the results of our survey, we have derived five factors including emotional effects, brand promises, pricing strategy, modern advertisements and detected promotions.

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## 1. Introduction

During the past few years, recent advances on information technology have significantly changed traditional advertisement systems (Lee et al., 2011). Many business owners use cyber space to penetrate into market and introduce their products and services. These days, it is possible to send an advertisement via email services or mobile short message service (SMS) virtually to hundreds of potential customers, instantly. The cost of advertisement via email or SMS is so low that many small businesses have chosen these techniques to penetrate into market. These days, there are literally various factors influencing new advertisement techniques and it is important to detect the effect of them using different methods such as factor analysis. Azad et al. (2013a), for instance, presented a study to detect important factors influencing brand identification using factor analysis. They reported five factors including sense of brand, brand community, trust to brand, value of brand and personality of brand. Azad et al. (2013b), in other study, found important factors influencing on food market using factor analysis. They stated six major factors including brand loyalty, physical characteristics, pricing effects, performance characteristics, brand relationship and brand position influence food industry, significantly.

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Patsioura et al. (2009) presented an effectiveness conceptual framework to make an assessment on the overall performance of corporate advertising web sites towards the multiple advertising, promotional and relationship marketing goals of their establishment. More specifically, communication, feedback and customer support policies were tested to detect their contribution in generating or affecting advertising “effects”. Their findings disclosed significant dimensions of the participants' behavior based on their actions, activities, preferences and intentions. In addition, the outcomes demonstrate a big impact of the relationship marketing qualitative factors in question on specific advertising effectiveness indicators.

Jung et al. (2009) investigated an important exception to the “value congruity hypothesis,” which exists that advertising could be more effective when it were congruent with cultural values. The survey presented a paradoxical “reverse authority effect” among young adult consumers in traditionally high power distance (PD) countries. The results stated a reverse authority impact in Korea and attenuation of this impact in the USA in the first study. In addition, the second study demonstrated a reverse authority impact in Thailand, implying the generality of the impact across young consumers in traditionally high PD countries. They stated that a shift away from traditional cultural values had appeared in the course of modernization, as Western ideology gained popularity among young adult consumers in Eastern countries.

Deane and Pathak (2009) examined a new online advertisement targeting method, which adapts and utilizes various powerful and well examined information retrieval and lexical methods to develop an estimate of a user's affinity for particular products and services based on an analysis of a user's web surfing behavior.

The development of mobile services has made breakthrough advances during the past two decades. Like Internet services, mobile telecommunications exists anywhere, anytime and always online characteristics. As growth in the Internet advertising market goes on, mobile advertising has absorbed much attention. Patrick Rau and Chen (2006) studied the effectiveness of two kinds of mobile message advertisements, watermarks and music. They performed two experiments to examine four proposed hypotheses. In this survey, the independent variable in experiment 1 was the watermark transparency (20%, 40% and 60%). The independent variable in experiment 2 was the music format including five levels: no music, vocal and instrumental version at high volume, vocal and instrumental version at low volume, instrumental version at high volume and instrumental version at low volume. The results stated that the watermarks transparency and format were effective in mobile advertising. Music and vocal/instrumental music versions were found useful in mobile advertisements. The vocal music version was detected effective in mobile advertising.

Nettelhorst and Brannon (2012) evaluated the impact of advertisement choice on individuals' subsequent intention towards the advertisement. People who took part in this survey decided which kind of advertisement to watch or they were not given a choice. They reported that advertisement choice substantially impacted female participants' subsequent attention towards the advertisement but not males'. This effect implied that this marketing method should be implemented in specific situations to target women predominately.

According to Kao et al. (2012), an increasing number of users apply cell phones daily and they are not only wish to make phone calls, but can also implement various applications on their mobile phones. When installing mobile applications, developers normally face with the cross-platform incompatibility problem. In addition, because mobile Web browsers have supported more and more Web-related standards, Web applications are more possible to be executed on various platforms than mobile apps. Kao et al. (2012) proposed a Web-based platform for applying applications on mobile devices, which provides various services for developers such as offline service, content adaptation service, and synchronization service.

## 2. The proposed model

This paper presents an empirical investigation to find the effect of new advertisement techniques on export based product development in a case study of mobile devices. The proposed study designs a questionnaire in Likert scale consists of 29 questions, distributes it among 150 exporters of mobile devices in Iran. Cronbach alpha is calculated as 0.826. In addition, Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Approx. Chi-Square are 0.790 and 1023.3, respectively. We first investigate some basic statistics to make sure there is no need to remove any questions. Table 1 summarizes the summary of our results.

**Table 1**  
The summary of basic statistics

	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Skewness		Kurtosis	
					Statistic	Std. Error	Statistic	Statistic
Customer friendly	193	3.00	2.00	5.00	-.920	.175	.776	.348
Advertising Language	193	4.00	1.00	5.00	-.650	.175	.354	.348
Potential customers	193	4.00	1.00	5.00	-.558	.175	.273	.348
Ongoing promotions	193	3.00	2.00	5.00	-.231	.175	-.539	.348
Leading market share	193	4.00	1.00	5.00	-.311	.175	-.365	.348
Monopoly position	193	4.00	1.00	5.00	-.614	.175	-.240	.348
Commodity production Favorites	193	3.00	2.00	5.00	-.868	.175	-.187	.348
Customer Loyalty	193	4.00	1.00	5.00	-.460	.175	-.411	.348
Brand Personality	193	4.00	1.00	5.00	-.682	.175	.175	.348
Too much negative publicity	193	4.00	1.00	5.00	-.148	.175	-.115	.348
Social values	193	4.00	1.00	5.00	-.486	.175	.684	.348
Advertising Strategy	193	4.00	1.00	5.00	-.667	.175	.855	.348
Dynamic Advertising	193	4.00	1.00	5.00	-.777	.175	.612	.348
Traditional media	193	4.00	1.00	5.00	-.287	.175	-.459	.348
Outdoor Advertising	193	4.00	1.00	5.00	-.254	.175	-.176	.348
Advertising by mail	193	4.00	1.00	5.00	.016	.175	-.508	.348
New Media	193	4.00	1.00	5.00	-.183	.175	-.750	.348
Customer demand	193	4.00	1.00	5.00	-.341	.175	.068	.348
The way of introducing a product	193	4.00	1.00	5.00	-.662	.175	.735	.348
Pricing decisions	193	3.00	2.00	5.00	-.674	.175	-.309	.348
Growth rate of sales	193	3.00	2.00	5.00	-.040	.175	-.631	.348
Potential customers	193	3.00	2.00	5.00	-.098	.175	-.712	.348
Unaware customers	193	3.00	2.00	5.00	.027	.175	-.840	.348
Customers buyer	193	4.00	1.00	5.00	-.271	.175	-.410	.348
Product Life Cycle	192	3.00	2.00	5.00	.136	.175	-.786	.349
Feedback Marketing Strategies	193	3.00	2.00	5.00	-.229	.175	-.509	.348
Valid N (listwise)	192							

The results of Table 1 clearly show that all skewness values are within acceptable limits, which means we do not need to remove any questions from the survey. Table 2 presents details of principal component analysis.

**Table 2**  
The summary of principal component analysis

Component	Total	Initial Eigenvalues		Total Variance Explained			Rotation Sums of Squared Loadings		
		% of Variance	%Cumulative	Total	% of Variance	%Cumulative	Total	% of Variance	%Cumulative
1	5.113	19.665	19.665	5.113	19.665	19.665	2.368	9.107	9.107
2	2.019	7.767	27.432	2.019	7.767	27.432	2.093	8.051	17.158
3	1.575	6.056	33.489	1.575	6.056	33.489	2.084	8.014	25.172
4	1.330	5.114	38.603	1.330	5.114	38.603	1.679	6.459	31.631
5	1.257	4.834	43.437	1.257	4.834	43.437	1.646	6.330	37.961
6	1.216	4.676	48.112	1.216	4.676	48.112	1.626	6.253	44.214
7	1.077	4.141	52.253	1.077	4.141	52.253	1.564	6.014	50.229
8	1.062	4.083	56.337	1.062	4.083	56.337	1.299	4.995	55.224
9	1.007	3.874	60.211	1.007	3.874	60.211	1.297	4.987	60.211
10	.945	3.636	63.847						
11	.878	3.377	67.224						
12	.862	3.315	70.539						
13	.810	3.116	73.654						
14	.756	2.909	76.564						
15	.729	2.803	79.367						
16	.657	2.528	81.895						
17	.595	2.289	84.184						
18	.566	2.178	86.362						
19	.555	2.133	88.495						
20	.515	1.982	90.478						
21	.492	1.891	92.369						
22	.457	1.756	94.125						
23	.444	1.709	95.834						
24	.392	1.507	97.341						
25	.378	1.453	98.794						
26	.314	1.206	100.000						

In addition, Fig. 1 shows Scree plot of the information and based on the results of Table 2 and Fig. 1 we can conclude that there are five factors associated with the proposed study of this paper. The study uses Varimax method as desirable rotation and Table 3 demonstrates the results of our survey.

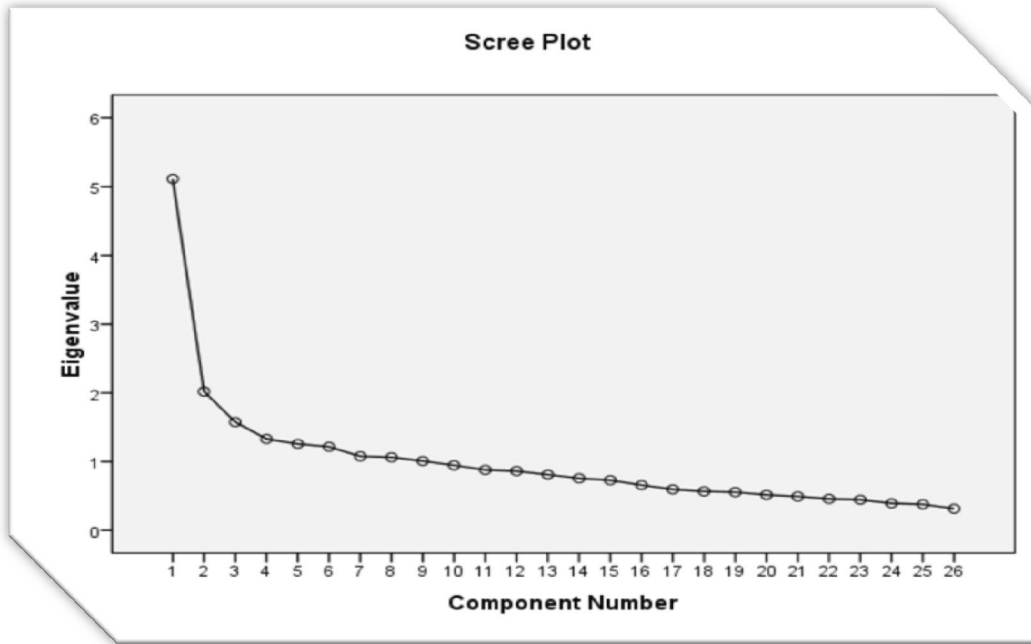


Fig. 1. The summary of Scree ploy

**Table 3**  
The summary of principal component analysis after rotation

	Factors								
	1	2	3	4	5	6	7	8	9
New Media	.772								
Advertising by mail	.752								
Outdoor Advertising	.566							.398	
Too much negative publicity	.551							-.342	
Advertising Language	.475					.335	.436		
Pricing decisions		.705							
Customer demand		.683							
The way of introducing a product		.539				.363			
Growth rate of sales		.391							
Customer Loyalty			.737						
Brand Personality			.728						
Social values			.507						
Unaware customers				.723					
Potential customers				.711					
Buyer customer		.436		.449			.354		
Ongoing promotions					.782				
Dynamic Advertising			.334		.560				
Product Life Cycle		.341			.469				
Advertising Strategy						.662			
Feedback Marketing Strategies						.660			
Customer friendly							.676		
Monopoly position							.596		
Traditional media			.414					.580	
Commodity production Favorites					.381			.431	
Competitors									.722
Leading market share									.570

Based on the results of Table 3, we have derived five factors including emotional effects, brand promises, pricing strategy, modern advertisements and detected promotions. Table 4 shows details of our findings on non-standard components.

**Table 4**  
The summary of factors extracted

Row	Factor (Importance)	Variable	Important coefficient
1	Modern Advertising (0.50)	New Media	0.63
		Advertising by mail	0.72
		Outdoor Advertising	0.51
2	Pricing Strategies (0.58)	Pricing decisions	0.61
		Customer demand	0.47
		Growth rate of sales	0.46
		The way of introducing a product	0.65
3	Brand Promise (0.59)	Customer Loyalty	0.72
		Brand Personality	0.77
		Social values	0.44
4	Emotional Impact (0.91)	Unaware customers	0.59
		Potential customers	0.71
		Buyer customers	0.29

Based on the results of Table 4, the relative importance of four factors including modern advertising, pricing strategies, brand promises and emotional impact are 0.50, 0.58, 0.59 and 0.91, respectively. Modern advertisement is the first factor in our investigation, which includes new media, advertising by mail and outdoor advertising. The second factor, pricing strategies, consists of four factors including pricing decisions, customer demand, growth rate of sales and the way of introducing a product. Brand promise is the third factor including customer loyalty, brand personality and social values. Finally, emotional impact is the last factor, which includes three factors. This factor includes unaware customers, potential customers as well as buyer customers.

### 3. Conclusion

During the past few years, there have been tremendous changes on advertisement techniques such as email messages, short mobile services, etc. These services normally do not cost significantly and may have pleasant outcomes. In this paper, we have presented a survey to detect influencing factors on developing export based products in mobile industry. The study designed a questionnaire and distributed among randomly selected experts who were involved in this industry and using factor analysis extracted important factors. The results of our survey have detected different factors such as modern advertising, pricing strategies, brand promises and emotional impact, which influence on product development in mobile industry. Based on the results of our survey, we have found out that email message is one of the most successful factors for penetrating into market and absorbing new potential customers.

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