

**The Effect of Viral Marketing Implementation on Sales
Revenues of Home Electric Appliances
Companies in Egypt**

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Abstract

This study investigates the effect of viral marketing implementation on sales revenues of home electric appliances companies operating in Egypt. For this purpose, data was collected from 76 Egyptian home electric appliances companies that had implemented the viral marketing technique. Data was collected about those companys' sales revenues through a time period of six years, in which a comparison was conducted between companys' sales revenues for a three – year period before the implementation of viral marketing and those companys' sales revenues for a three – year period after the implementation of viral marketing. Hence, the effect of viral marketing implementation on those companys' sales revenues can be observed. Statistical analysis was carried out using the regression approach and paired – samples approach. The results of the study show that the implementation of viral marketing technique had a significant effect on Egyptian home electric appliances companies.

Keywords: Viral marketing, electronic word – of – mouth (EWOM), online marketing, pull strategy marketing.

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ملخص البحث

يهدف البحث إلى دراسة تأثير تطبيق التسويق الفيروسي على إيرادات مبيعات شركات الأدوات الكهربائية المنزلية العاملة في مصر. واعتمد البحث على أسلوب الدراسة الميدانية، حيث تم جمع بيانات عن إيرادات المبيعات الخاصة بـ 76 شركة مصرية قامت بتطبيق التسويق الفيروسي. تم جمع هذه البيانات عن فترة زمنية مدتها ستة سنوات، حيث يمكن مقارنة إيرادات مبيعات هذه الشركات لمدة 3 سنوات قبل تطبيق التسويق الفيروسي مع إيرادات المبيعات لنفس هذه الشركات لمدة 3 سنوات بعد تطبيق التسويق الفيروسي. و من ثم يمكن ملاحظة تأثير تطبيق التسويق الفيروسي على إيرادات مبيعات هذه الشركات. تم تحليل هذه البيانات باستخدام أسلوب الانحدار ومنهجية العينات المرتبطة. لقد توصلت نتائج هذا البحث إلى أن تطبيق التسويق الفيروسي له تأثير معنوي على إيرادات مبيعات شركات الأدوات الكهربائية المنزلية المصرية.

1. Introduction.

Viral marketing is one of the latest marketing techniques that has changed the traditional way by which consumers buy their goods and services. Consumers are no longer bound to opening times or specific locations, rather they can be active virtually at any time and at any place to buy their goods and services online. (Fong K. and Yazdanifard, R., 2014, p.1). Fong K. and Yazdanifard, R. (2014) emphasized that, in order to adapt with such technological advances that occur in the world of business, marketers should understand the viral marketing technique concept and the way of its implementation.

Viral marketing technique is considered as one of the most recent marketing trends that reflects the transformation occurred in the marketing practices. (Ghanem, M. S., 2019, p. 80). It is used to connect companies and customers to interact together through social media platforms, which in turn increases brand awareness and company's sales revenues. (Bhatti, A. et al., 2020, p. 2817). Ghanem, M. S. (2019) added that the main idea of viral marketing technique depends on sending messages and information about company's products through websites, which in turn encourages users to buy these products from one side, and then re-sending these messages and information to others from the other side to persuade them to buy those products in return for some incentives.

Despite the novelty of viral marketing technique, many businesses in the world have implemented it. In this context, the present research investigates the effect of viral marketing implementation on sales revenues of home electric appliances companies operating in Egypt.

2. Literature review.

2.1 The origin of viral marketing.

The concept of viral marketing was first introduced by Steve Jurvetson and Time Draper in 1997. They wrote an article entitled “Viral marketing”, which described the process of sending advertising emails from tourists to others using Hotmail. Hence, tourists became “infected” with an advertising message which was passed from one tourist to another as a flu virus. (Daif, R. and Elsayed, K., 2019, p. 35; Sudarevic, T. et al., 2013, p. 391). Rollins, B. et al.(2014) emphasized that Hotmail was the first application of viral marketing. Khuong, M. N. and Thanh, T. (2016) added that Hotmail. Com successfully marketed the email service through viral means, by putting a signature at the bottom of users’ emails linking to Hotmail, offering a free email address.

A hotmail’s tagline was launched as “Get your private, free e-mail from Hotmail at <http://www.hotmail.com>”. This tagline was added automatically to every email sent from a hotmail account. Then, it was passed on from existing Hotmail users to the recipients of their email messages in the way that viruses spread. Hence, the term “Viral marketing” evolved. (Berger, J. and Milkman, K.L., 2013, p. 20; Woerndl, M., et al., 2008, p. 34).

2.2 Meaning of viral marketing.

Word - of - mouth marketing is a broad spectrum of marketing phenomena that refers to consumers talking about company’s products. (Rollins, B. et al., 2014, p. 3; Helm, S. 2000, p. 159).

Off - the - internet marketing, the viral marketing has been referred to “word - of - mouth”, or “network marketing”. But, on - the - internet marketing it is called “viral marketing”, or “electronic word - of mouth (EWOM)”, or “pull strategy of marketing”. (Deepa, N. and Thenmozhi, S., 2019, p. 89; Jovanovska, S.R., 2017, p. 11, Sudarevic, T. et al., 2013, p. 391).

There are many definitions of viral marketing that illustrate its meaning, among of them; viral marketing is defined as “the promotion of a company or its products and services through a persuasive message designed to spread typically online from one person to another person”. (Daif, R. and Elsayed, K., 2019, p. 35). Ghanem, M. S., 2019 and Moh’d, A., 2017 added that “viral marketing is a recent marketing phenomenon that motivates the process of directing messages through the internet, so that these messages build a base of customers at a low cost by offering prompt benefit to users that encourages them to spread the message, and then recruit new customers”. Mustikasari, A. and Widaningsih, S., 2018 emphasized that “Viral marketing is an activity of electronic word of mouth in which some form of marketing message related to a company, brand, or product is transmitted in an exponential way often through the use of social media applications”.

Fong, K. and Yazdanifard, R.(2014) illustrated that viral marketing is defined as “a direct marketing technique in which an organization persuades online consumers to forward its publicity material in e-mails from one person to another”.

2.3 Elements of viral marketing:

2.3.1 It offers free products of services: Daif, R. and El Sayed, K., 2019; Richardson, M. and Domingos, p., 2012 illustrated that most viral marketing campaigns give away valuable products including goods or services to attract attention. For example: some companies provide e-books and e-articles freely. They give links to their site and a short resource box declaring who they are. Once the reader clicks on the company's site address, he/she can contact the company at any time. (Deepa, N. and Thenmozhi, Si, 2019, p. 89; Stewart, D. B. and Ewing, M.T., 2009, p. 210).

2.3.2 It provides effortless and easy transfer to others: A viral marketing message must be easily transferred without any disortations or degradation through social websites, email, graphics, or software download. That's why viral marketing works on the network because communications is simple, instant, quick, and inexpensive. (Granate, G. and Scozzese, G., 2018, p. 107; Sathya, P. and Indirajith, R., 2018, p. 105).

2.3.3 It scales easily from small to large: In order to spread like wildfire, the transmission method must be rapidly scalable from small to large. Marketers must realize that if the virus multiplies only to kill the host before spreading nothing is accomplished. (Sayed, A. et al., 2012, p. 115; Klopper, H. B., 2002, p. 4).

2.3.4 It uses existing communication networks: a person's broader social network may consist of (8-12) people in his network of friends, family, and associates. A person's

network may also be extended to include hundreds or even thousands of contacts depending upon his/her position in society. (Daif, R. and Elsayed, K., 2019, p. 36; Van der Lans, R., et al., 2010, p. 350).

2.3.5 It exploits motivations and behaviors: Effective viral marketing campaigns trigger human motivations and behaviors. Desire is what drives people, such as the desire to be cool, popular, understood, and loved. The desire to communicate something has produced millions of websites and billions emails and conversations, which allow people to share messages that make them feel popular and proud among their peers. (Lekhanya, L.M., 2014, p. 216; Wei, L.S., 2014; Walson, R.F., 2012).

2.3.6 It takes advantage of other resources to get the word out: The most creative viral marketing campaigns use others' resources to get the word out. For example: Placing a text or graphic links on others' websites (YouTube). The moment someone's else's website is relaying your marketing message, someone's else resources are depleted instead of your own. (Wanpole, H., 2012; Klopper, H.B., 2002, p. 6).

2.4 Advantages of viral marketing:

2.4.1 Cost effective method: The implementation of viral marketing campaigns is relatively inexpensive relative to other forms of advertising and marketing campaigns. Implementing successful viral marketing campaigns helps in delivering promotional messages, creating brand awareness and positive brand image at relatively low cost. (Rehman, S., 2018, p. 30; Woerndl, M. et al., 2008, p. 35).

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2.4.2 Rapid speed of diffusion: Viral messages can reach audiences within a short period of time, as messages spread exponentially at a rapid pace. This rapid diffusion leads to the quick adoption of the marketed product. (Rehman, S. V. et al., 2019, p. 5; Woerndl, M. et al., 2008, p. 35).

2.4.3 Peer – to – peer transmission: Viral marketing encourages the transmission of messages among peers, which is one of the most influential marketing methods used by marketers. (Zernigah, K. I. and Sohail, K., 2012, p. 633, Woerndle, M. et al., 2008, p. 35).

2.4.4 Audience reach: Implementing successful viral marketing campaigns helps to reach to large audience, as marketers get access to diverse audiences through social contacts and can benefit from effective targeting. This in turn increases exposure to the message of the company's product being marketed, and maximizes company's productivity, sales, market share, and profits. (Alexandra, p. et al., 2011; Woerndle, M. et al., 2008, p. 35).

2.4.5 A new distribution channel: Customers may have an incentive to post advertisements on their favorite download sites or other distribution channels, in order to maximize the total sales of their copy application. (Bhatti, A. et al., 2020, p. 2818, Phelps, J. E. et al., 2014, p. 335).

2.5 Critical success factors of viral marketing implementation:

2.5.1 Social media usage: Deepa, N. and Thenmozhi (2019) emphasized the key role of social media in today's

business world, since entire social networks have migrated to the web. Hence, a large portion of society are now online. Mustikasari, A. and widaningshi, Si (2018) as well as Bhatti, A. (2018 b) added that the transmission of messages from one person to another till they reach to a large percentage of people through social media is known as viral marketing. Bhatti, A. et al. (2020); Bhatti, A. et al. (2019); Saleh, N. M. et al. (2016) illustrated that social media can be used to promote and advertise company's products online through many ways such as Facebook, YouTube, LinkedIn, Twitter, Emails, Instagram, Whatsapp messages, web pages. This in turn helps to increase brand awareness and thereby lead to maximizing company's market share, sales revenues, and profits.

2.5.2. Internet-based technology usage: The main idea of implementing viral marketing technique is mainly based on using internet-based technology. Ghanem, M.S. (2019) argued that viral marketing is the process of directing messages through the internet, so that these messages build a base of customers at a low cost by offering prompt benefit to users that encourages them to spread the message and then recruit new customers.

One important benefit is that contacting individuals through the internet is relatively cost-free; thereby it is possible for one individual to contact hundreds who can also contact thousands more. (Gerlich, R. N. et al., 2010, p. 38). Hence, viral marketing as a trend has shown enormous strength due its fundamentally low-cost. (mustickasari, A. and WidanningSih, A., 2018, p. 647). Transmission of viral marketing occurs through many

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ways including word of web, word of e-mail, word of electronic mouth such as blogs, word of instant messaging servers such as MSN, Yahoo, or Google talk, as well as blue tooth.

2.5.3 Attractiveness of the message content: Reichstein, T. and Bruschi, I. (2010); Woerndl, M. et al. (2008) illustrated that the attractiveness of the message content is a critical factor that affects the successful implementation of viral marketing technique. They added that there are some dimensions that measure the degree of message attractiveness; including:

- **Imagination:** Refers to the extent to which the message provides entertainment and imagination to the receiver.
- **Fun and intrigue:** Refers to the extent to which the message offers fun and intrigue to the receiver.
- **Ease of use:** Refers to the extent to which the message can be easily used by the receiver.
- **Engaging:** Refers to the extent to which the message engages both the sender and receiver.

2.5.4 Characteristics of message diffusion: Ghanem, M.S. (2019); Pandey, J. et al. (2012); as well as woern DL, M. et al. (2008) illustrated the characteristics of message diffusion as follows:

- **Exponential:** Refers to the extent to which the message spreads exponentially among audiences.
- **Speed:** Refers to the extent to which the message spreads at a rapid pace among audiences.

- **Audience reach:** Refers to the extent to which the message reaches a wide audience and to the right target audience.

2.5.5 Credibility of influencers: Anam, B. and Rehaman, S. U., 2019 emphasized the dimensions that measure the credibility of social media influencers, including trust, honesty, sincere, and concern with company's interest rather than getting incentives in return.

2.5.6 Characteristics of the product marketed: Bouzas, D. G. and Iturrigagoitia, M. A (2015); Bryant, D. (2010); as well as Woerndl, M. et al. (2008) emphasized the characteristics of a company's products including goods and services as one of the main factors affecting the implementation of viral marketing, for example:

- **Suitability:** Refers to the extent to which the product marketed is suitable for a viral marketing campaign.
- **Level of demand:** Refers to the extent to which the product marketed is highly demanded by consumers.

2.5.7 Peer – to – peer information conduit: Ghanem M. S. (2019) as well as Woerndl, M. et al. (2008) illustrated the importance of peer – to – peer information conduit as a key factor affecting the implementation of viral marketing technique. It includes:

- **Channels available and used:** Refers to the communication channels available to senders and receivers. It also refers to the types of channels used by senders to transmit the message. The channels of

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transmitting viral messages include:

- A. Word of web:** Refers to typing into a web-based form that converts an information into an email and send it to recipients. (Deepa, N. and Thenmozhi, S., 2019; Yeoh, E. et al., 2013).
- B. Word of E-mail:** Is a very common type, includes forwarding e-mails such as Jokes, Quizzes, and Comprising pictures. (Deepa, N. and Thenmozhi, S., 2019; Abedniya, A. and Mahmoudi, S., 2010).
- C. Word of mouth:** Is considered as a spoken communication or web dialogue, include blogs, message board, and e-mails. (Deepa, N. and Thenmozhi, S., 2019; Aghdaie; S. F. et al., 2012).
- D. Word of instant message (IM):** Is the fastest growing mode of transmission; in which hyper links are sent over instant messaging servers such as MSN, Yahoo., or Google talk. (Deepa, N. and Thenmozhi, S., 2019; Chohan, R., 2013).
- E. Bluetooth:** The widespread of mobile phones which support free bluetoothing has enabled promotional videos to be transmitted virally between handsets. (Deepa, N. and Thenmozhi, S., 2019; Hamed, E.M., 2017).

2.5.8 The overall structure of viral marketing campaign: Ghanem, M. S. (2019) and Woerndl, M. et al. (2008) stated that the overall structure of viral marketing is an important factor affecting its implementation. For example: The extent to which the campaign encourages viral marketing activities. The extent to which the

campaign adheres to ethical standards as well as follows the legal requirements.

2.6 Barriers impeding the implementation of viral marketing:

2.6.1 Lack of control in message content, timing, and audience: Coulter, K.S. and Roggeveen, A.L., 2012; Woerndl, M. et al., 2008, argued that; on one hand, companies may lack control in the Widespread of message content, as well as in the time frame within which the message should be transmitted. On the other hand, after all the company's message may be transmitted to people outside the target audience.

2.6.2 Lack of measurement: Deepa, N. and Thenmozhi, S., 2019; Kashem, M.A. and Uddin, M., 2013, stated that a company can't always track who received its emails and that they did with them. It may not be possible to ask if people who adopted a company's product was due to the viral marketing campaign executed. So, it is difficult to track and measure success.

2.6.3 Spam threats: Deepa, N. and Thenmozhr, S., 2019; Kadyan, A. and Aswal, C., 2014 stated that if viral marketing campaigns are done poorly, this may lead to large – scale span.

2.6.4 Negative impact on brand image: Deepa, N. and Thenmozhi, S., 2019; Woerndl, M. et al., 2008 added that; in some cases, individuals may modify the content of the message transmitted, either through adding or omitting something. This may lead to negative brand image which result in negative word – of – mouth, then

boycott, ruin, and unfavorable attitudes.

2.6.5 Consumers' unwillingness to pass on a company's viral message unless getting high returns: Therefore, the dependency on consumers for message transmission is potentially risky. (Bhatti, A. et al., 2020, p. 2819).

2.6.6 Lack of ethical standards: Woerndl, M. et al., 2008; Mohsen, M. and Zahra, A.D., 2013 argued that; on one hand consumers may feel exploited, cheated, and used. On the other hand, consumers may view viral messages as an invasion to their privacy.

2.6.7 Lack of legal standards: Refers to the extent to which companies follow the legal standards required in sending viral messages through social media. (Morais, N.E. and Mhando, J., 2012, Woerndl, M. et al., 2008).

3. Research design and methodology:

3.1 Research problem:

In the light of the pilot study and previous studies, the research problem can be specified as follows:

What is the effect of viral marketing implementation on sales revenues of home electric appliances companies in Egypt?

3.2 Research variables:

3.2.1 Independent variable:

1. Viral marketing implementation.

3.2.2 Dependent variable:

1. Sales revenues of home electric appliances companies in Egypt.

3.3 Research hypotheses:

To study the research problem, it is necessary to test the following hypotheses, which is developed in the light of the literature review.

H₁: There is no significant effect of viral marketing implementation on sales revenues of home electric appliances companies in Egypt.

3.4. Research objectives:

The main objectives of this research are:

- 3.4.1** To illustrate the concept of viral marketing as a recent marketing technique, and its implementation on home electric appliances sector in Egypt.
- 3.4.2** To compare between the sales revenues of home electric appliances companies for a three-year period before the implementation of viral marketing, and a three-year period after the implementation of such technique.
- 3.4.3** To determine the effect of viral marketing implementation on sales revenues of home electric appliances companies in Egypt.
- 3.4.4** To demonstrate the benefits resulting from the implementation of viral marketing in home electric appliances companies in Egypt.
- 3.4.5** To provide recommendations that help in the implementation of viral marketing in other manufacturing companies that hadn't implemented this technique yet.

3.5 Research importance:

The importance of this research stems from the following reasons:

- 3.5.1** The main findings of this research will contribute to marketing management literature in general, and viral marketing implementation literatures in particular. This in turn may provide other researchers with useful ideas to be able to conduct a research in the field of viral marketing.
- 3.5.2** Scarcity of Arabic researches handling the subject of viral marketing implementation.
- 3.5.3** The issue of viral marketing implementation in home electric appliances companies operating in Egypt is thought to be of great importance, since home electric appliances sector is considered to be one of the most important manufacturing sectors that provides both producers and consumers with a lot of benefits. Thus, this sector contributes to nation's economy.
- 3.5.4** The major contribution of this research is to determine the effect of viral marketing implementation on sales revenues of home electric appliances companies in Egypt.
- 3.5.5** The significant contribution of this research is to provide useful guidelines and recommendations for other manufacturing companies.

3.6 Measures:

The hypothesis of this study was tested using two main

approaches. The first main approach used was the regression approach, in which the simple regression analysis model was used. The ordinary least squares (OLS) method was used to estimate the parameters of the regression model. The second approach used was the paired – samples approach, in which T-test was used to calculate the mean value and standard deviation of sales revenues of home electric appliances companies before and after the implementation of viral marketing.

A quantitative approach was used to collect factual numerical data of sales revenues of home electric appliances companies operating in Egypt through a time period of six years, in which a comparison was conducted between companys’ sales revenues for a three – year period before the implementation of viral marketing, and those companys’ sales revenues for a three – year period after the implementation of viral marketing. Hence, the effect of viral marketing on sales revenues of home electric appliances companies operating in Egypt can be noticed, which is the main aim of the study.

3.7 Research population and research sample:

3.7.1 Research population:

According to the federation of Egyptian chamber of commerce (FEDCOC), the research population consists of 300 home electric appliances companies operating in Egypt, which had implemented the viral marketing technique.

3.7.2 Research sample:

The research sample consists of 76 home electric companies operating in Egypt, which had implemented

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the viral marketing technique.

Those companies were classified in to three strata: 14 companies with large capital, 32 companies with medium capital, and 30 companies with small capital.

Hence, the stratified random sampling technique was the most suitable one for this research. The sample size was calculated as follows:

$$n = \frac{N}{(N-1)e^2 + 1}$$

Where; n: is sample size.
N: is population size.
e : is the margin of error.

If $N = 300$ and $e = 0.1$, then $n = 76$ home electric appliances companies.

3.8 Data analysis and results:

Testing the research hypothesis:

The research hypothesis states that:

“There is no significant effect of viral marketing implementation on sales revenues of home electric appliances companies in Egypt”.

To test this hypothesis, two approaches were used:

(1) Regression approach and (2) paired-samples approach.

(1) Regression approach:

I- Firstly: The regression approach is used for testing the research hypothesis in all 76 companies altogether as follows:

To test the research hypothesis using regression approach,

simple regression analysis was used. The dependent variable is sales revenues (SR) of home electric appliances companies, and the independent variable is viral marketing implementation (VMI) { a dummy variable taking a value of 0 in pre-implementation period and 1 in post-implementation period}.

The ordinary least squares (OLS) method is used to estimate the parameters of the regression model. This method assumes that:

- The error terms have equal variances (homoscedasticity).
- The error terms are not correlated (no autocorrelation).

If these assumptions are not met, standard errors of the estimates of the least squares method should be corrected. This can be done by the Newey-West HAC procedure (*Heteroscedasticity and Autocorrelation Consistent standard errors*). One advantage of the procedure is that it corrects for both heteroscedasticity and autocorrelation.

The following tests were used to verify the assumptions of the OLS method.

- **Homoscedasticity:**

The assumption that the error terms have equal variances (homoscedasticity) is verified using White test. It tests the null hypothesis that the heteroscedasticity (unequal variances) does not exist versus the alternative hypothesis that there is heteroscedasticity.

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Table (1): Results of White test for checking the homoscedasticity assumption (the regression model for the relationship between VMI & SR).

White test	
<u>Test statistic (F)</u>	<u>P-value</u>
22.787	0.000

The result of White test indicates that there is heteroscedasticity.

• No autocorrelation:

The assumption that the error terms are not correlated (no autocorrelation) is verified using Breusch-Godfrey serial correlation test. It test the null hypothesis that the autocorrelation does not exist versus the alternative hypothesis that the autocorrelation exists.

Table (2): Results of Breusch-Godfrey test for checking the no autocorrelation assumption (the regression model for the relationship between VMI & SR).

Breusch-Godfrey serial correlation test	
<u>Test statistic (F)</u>	<u>P-value</u>
417.489	0.000

The result of Breusch-Godfrey test indicates the there is autocorrelation. Based on the previous results, standard errors of the estimates of the least squares method should be corrected for heteroscedasticity and autocorrelation.

The results of estimating the regression model for the relationship between VMI and SR (after correcting the standard errors using HAC procedure) are shown below.

Table (3): Results of the regression model for the relationship between VMI & SR

Variables	Coefficient (B)	T-Test	
		t	P-value
Constant	1318022	7.004	0.000
VMI	1353581	5.846	0.000
F	25.453		
P-value	0.000		
R	0.230		
R ²	0.053		

The results in the above table indicate that the overall regression model is significant ($F = 22.453$, $P\text{-value} < 0.05$).

The value of the coefficient of determination (R^2) is 0.053, i.e. the independent variable (viral marketing implementation) explains only 5.3% of the variance in the dependent variable (sales revenues of home electric appliances companies).

The value of the correlation coefficient (R) between independent and dependent variables is 0.230, indicating that there is a weak, positive correlation.

The results of T-Test showed that there is a statistically significant relationship ($P\text{-value} < 0.05$) between the independent variable “viral marketing implementation” and the dependent variable “sales revenues of home electric appliances

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companies”. The sign of the estimated regression coefficient indicates that the two variables are positively related.

Accordingly, the research hypothesis is not supported.

II- Secondly: The regression approach is used for testing the research hypothesis in each type of companies separately as follows:

A- In small companies:

The results of estimating the regression model for the relationship between viral marketing implementation and sales revenues in *small* home electric appliances companies (after correcting the standard errors using HAC procedure) are shown below.

Table (4): Results of the regression model for the relationship between VMI & SR in *small* companies.

Variables	Coefficient (B)	T-Test	
		t	P-value
Constant	139495.4	12.645	0.000
VMI	104066.4	5.715	0.000
F	43.728		
P-value	0.000		
R	0.443		
R ²	0.197		

The results in the above table indicate that the overall regression model is significant ($F = 43728$, $P\text{-value} < 0.05$).

The value of the coefficient of determination (R^2) is 0.197, i.e. the independent variable (viral marketing

implementation) explains 19.7% of the variance in the dependent variable (sales revenues of *small* home electric appliances companies).

The value of the correlation coefficient (R) between independent and dependent variables is 0.443, indicating that there is a weak, positive correlation.

The results of T-Test showed that there is a statistically significant relationship (P-value < 0.05) between the independent variable “viral marketing implementation” and the dependent variable “sales revenues of *small* home electric appliances companies”. The sign of the estimated regression coefficient indicates that the two variables are positively related.

Accordingly, the research hypothesis is not supported in *small* companies.

B- In medium companies:

The results of estimating the regression model for the relationship between viral marketing implementation and sales revenues in *medium* home electric appliances companies (after correcting the standard errors using HAC procedure) are shown below.

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Table (5): Results of the regression model for the relationship between VMI & SR in *medium* companies.

Variables	Coefficient (B)	T-Test	
		t	P-value
Constant	1020311	14.706	0.000
VMI	1024163	7.535	0.000
F	73.485		
P-value	0.000		
R	0.528		
R ²	0.279		

The results in the above table indicate that the overall regression model is significant (F = 73.485, P-value < 0.05).

The value of the coefficient of determination (R²) is 0.279, i.e. the independent variable (viral marketing implementation) explains 27.9% of the variance in the dependent variable (sales revenues of *medium* home electric appliances companies).

The value of the correlation coefficient (R) between independent and dependent variables is 0.528, indicating that there is a strong, positive correlation.

The results of T-Test showed that there is a statistically significant relationship (P-value < 0.05) between the independent variable “viral marketing implementation” and the dependent variable “sales revenues of *medium* home electric appliances companies”. The sign of the estimated regression

coefficient indicates that the two variables are positively related.

Accordingly, the research hypothesis is not supported in *medium* companies.

C- In Large companies:

The results of estimating the regression model for the relationship between viral marketing implementation and sales revenues in *large* home electric appliances companies (after correcting the standard errors using HAC procedure) are shown below.

Table (6): Results of the regression model for the relationship between VMI & SR in *large* companies.

Variables	Coefficient (B)	T-Test	
		t	P-value
Constant	4523917	18.111	0.000
VMI	4784069	7.150	0.000
F	64.604		
P-value	0.000		
R	0.664		
R ²	0.441		

The results in the above table indicate that the overall regression model is significant ($F = 64.604$, $P\text{-value} < 0.05$).

The value of the coefficient of determination (R^2) is 0.441, i.e. the independent variable (viral marketing

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implementation) explains 44.1% of the variance in the dependent variable (sales revenues of *large* home electric appliances companies).

The value of the correlation coefficient (R) between independent and dependent variables is 0.664, indicating that there is a strong, positive correlation.

The results of T-Test showed that there is a statistically significant relationship (P-value < 0.05) between the independent variable “viral marketing implementation” and the dependent variable “sales revenues of *large* home electric appliances companies”. The sign of the estimated regression coefficient indicates that the two variables are positively related.

Accordingly, the research hypothesis is not supported in *large* companies.

(2) Paired-Samples approach:

I- Firstly: The paired samples approach is used for testing the research hypothesis in all 76 companies altogether as follows:

To test the research hypothesis using paired-samples approach, T-Test was used. For each observation (company), the mean value of sales revenues is calculated for both the period before viral marketing implementation (pre-implementation period) and after the implementation (post-implementation period).

The following table shows some descriptive statistics (mean and standard deviation) for sales revenues of home electric appliances companies before and after viral marketing implementation, and the results of T-Test.

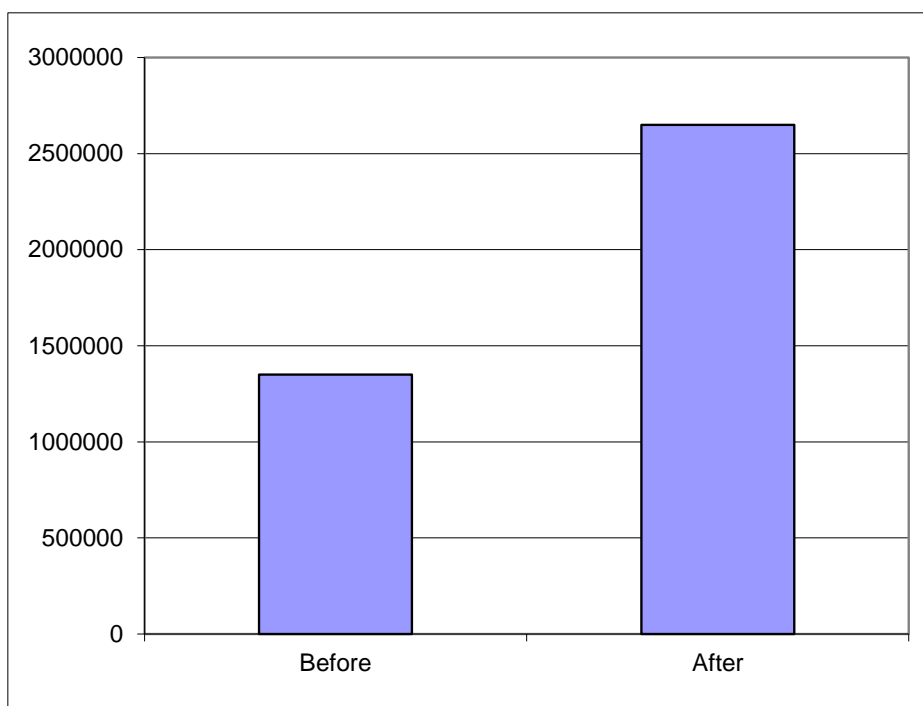
Table (7): Results of paired-samples T-Test

Variable	Before implementation		After implementation	
	Mean	S.D.	Mean	S.D.
Sales revenues	1318021.5	1669965.8	2671602.5	3492262.6
T-Test				
t	-6.448			
P-value	0.000			

It could be concluded that the mean value of sales revenues of home electric appliances companies was 1318021.5 before viral marketing implementation. In the post-implementation period, the mean value of sales revenues raised to 267160.2 (Figure 1), with a percentage of increase equals 102.7%.

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Figure (1): Sales revenues before and after viral marketing implementation.



The results of paired-samples T-Test showed that the difference between the two mean values is statistically significant ($P\text{-value} < 0.05$).

Accordingly, there is a significant effect of viral marketing implementation on sales revenues of home electric appliances companies in Egypt. The research hypothesis is not supported.

II- Secondly: The paired-samples approach is used for testing the research hypothesis in each type of companies separately as follows:

A- In small companies:

The following table shows some descriptive statistics (mean and standard deviation) for sales revenues in *small* home electric appliances companies before and after viral marketing implementation, and the results of T-Test.

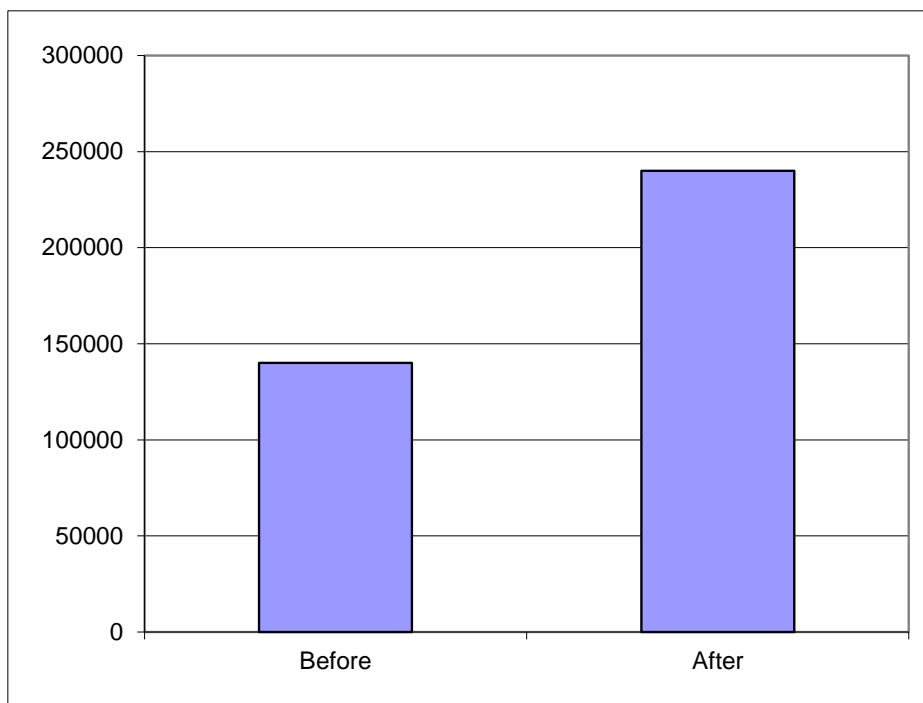
Table (8): Results of paired-samples T-Test (in small companies)

Variable	Before implementation		After implementation	
	Mean	S.D.	Mean	S.D.
Sales revenues	139495.3	67411.4	243561.7	119070.7
T-Test				
t	-10.448			
P-value	0.000			

It could be concluded that the mean value of sales revenues *small* home electric appliances companies was 139495.3 before viral marketing implementation. In the post-implementation period, the mean value of sales revenues raised to 243561.7 (Figure 2), with a percentage of increase equals 74.6%.

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Figure (2): Sales revenues before and after viral marketing implementation (in small companies)



The results of paired-samples T-Test showed that the difference between the two mean values is statistically significant ($P\text{-value} < 0.05$).

Accordingly, there is a significant effect of viral marketing implementation on sales revenues in *small* home electric appliances companies in Egypt. The research hypothesis is not supported in *small* companies.

B- In medium companies:

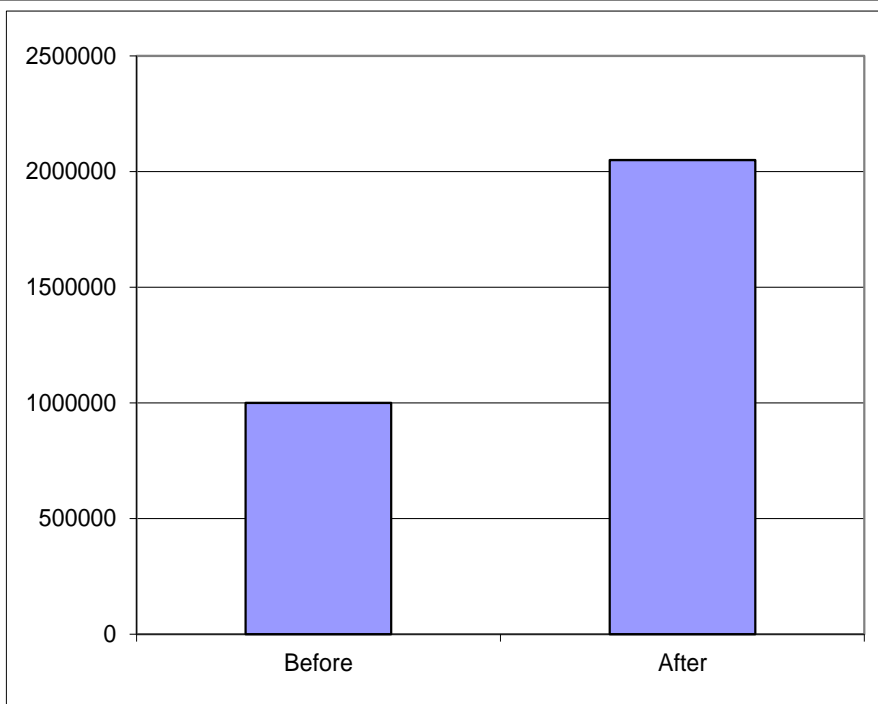
The following table shows some descriptive statistics (mean and standard deviation) for sales revenues in *medium* home electric appliances companies before and after viral marketing implementation, and the results of T-Test.

Table (9): Results of paired-samples T-Test (in medium companies)

Variable	Before implementation		After implementation	
	Mean	S.D.	Mean	S.D.
Sales revenues	1020310.5	436803.8	2044473.2	923054.8
T-Test				
t	-11.526			
P-value	0.000			

It could be concluded that the mean value of sales revenues in *medium* home electric appliances companies was 1020310.5 before viral marketing implementation. In the post-implementation period, the mean value of sales revenues raised to 2044473.2 (Figure 3), with a percentage of increase equals 100.4%. **Figure (3):** Sales revenues before and after viral marketing implementation (in medium companies)

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The results of paired-samples T-Test showed that the difference between the two mean values is statistically significant ($P\text{-value} < 0.05$).

Accordingly, there is a significant effect of viral marketing implementation on sales revenues *medium* home electric appliances companies in Egypt. The research hypothesis is not supported in *medium* companies

C- In Large companies:

The following table shows some descriptive statistics (mean and standard deviation) for sales revenues in *large* home electric appliances companies before and after viral marketing implementation, and the results of T-Test.

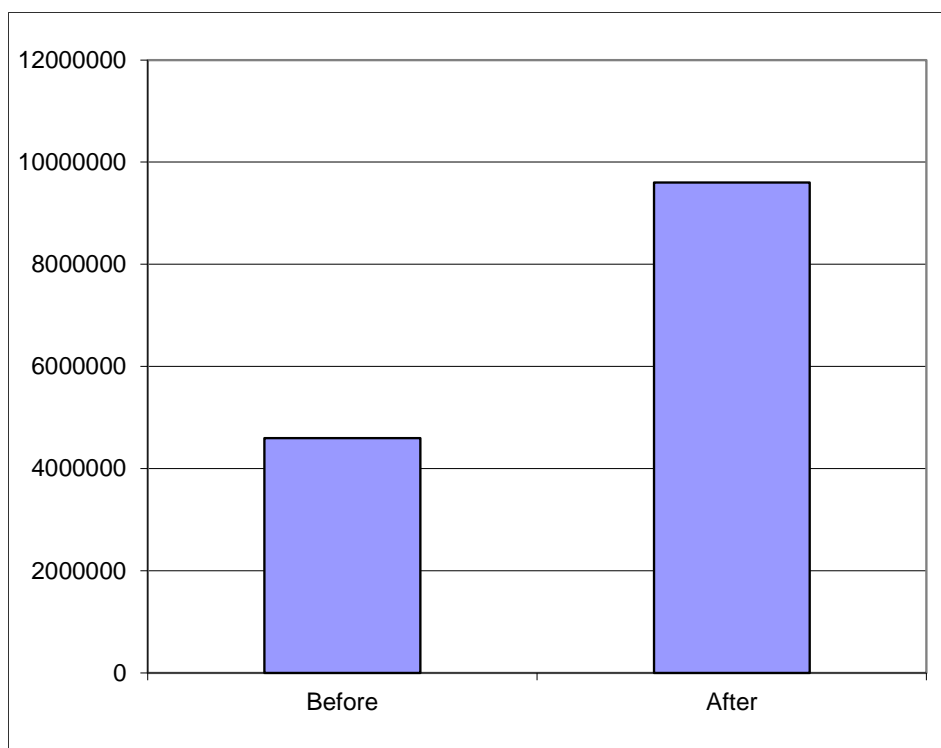
Table (10): Results of paired-samples T-Test (in large companies)

Variable	Before implementation		After implementation	
	Mean	S.D.	Mean	S.D.
Sales revenues	4523917.1	1064091.1	9307985.7	2509050.7
T-Test				
t	-12.147			
P-value	0.000			

It could be concluded that the mean value of sales revenues in *large* home electric appliances companies was 4523917.1 before viral marketing implementation. In the post-implementation period, the mean value of sales revenues raised to 9307985.7 (Figure 4), with a percentage of increase equals 105.8%.

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Figure (4): Sales revenues before and after viral marketing implementation (in large companies)



The results of paired-samples T-Test showed that the difference between the two mean values is statistically significant ($P\text{-value} < 0.05$).

Accordingly, there is a significant effect of viral marketing implementation on sales revenues in *large* home electric appliances companies in Egypt. The research hypothesis is not supported in *large* companies.

4. Discussion.

The present study provided an empirical evidence that the implementation of viral marketing technique had a significant effect on increased sales revenues of home electric appliances companies operating in Egypt, including small, medium and large companies. Accordingly, this finding rejects the main hypothesis of the research which states that there is no significant effect of viral marketing implementation on sales revenues of home electric appliances companies in Egypt.

Concerning small companies which are 30 home electric appliances companies operating in Egypt according to the research sample size; the value of the correlation coefficient (R) between dependent and independent variables is 0.433 which indicates that there is a weak, positive correlation between viral marketing implementation and sales revenues of home electric appliances companies in Egypt. Also, the mean value of sales revenues of small companies has increased by 74.6% after the implementation of viral marketing as illustrated in figure 2. Accordingly, the research hypothesis is not supported in small companies. These findings are in agreement with prior research studies (e.g. Bhatti, A. et al., 2020; Daif, R. and Elsayed, K., 2019; Mustikasari, A. and Widaningsih, A., 2018; Granata, G. and Scozzese, G., 2018; Jovanovska, S.R., 2017).

Concerning medium companies, which are 32 home electric appliances operating in Egypt according to the research sample size; the value of the correlation coefficient (R) between independent and dependent variables is 0.528, which indicates that there is a strong, positive correlation between viral marketing implementation and sales revenues of home electric appliances companies in Egypt. Also, the mean value of sales

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revenues of medium companies increased by 100.4% after the Implementation of viral marketing as illustrated in figure 3. Accordingly the research hypothesis is not supported in medium companies. These findings are agreement with prior research studies (e.g. Ghanem, M. S., 2019; Deepa N. and Thenmozhi, S., 2019; Reichstein, T. and Bruschi, I., 2019; Anam, B. and Rehman, S.U., 2019; Rehman, S., 2018; Ramanathan, U. et al., 2017, Hamed, E. M., 2017; Hirvijarvi, F., 2017; Woerndl, M. et al., 2008; Klopper, H. B., 2002).

Concerning large companies which are 14 home electric appliances companies operating in Egypt according to the research sample size; the value of the correlation coefficient (R) between dependent and independent variables is 0.664, which indicates that there is a very strong, positive correlation between viral marketing implementation and sales revenues of home electric appliances in Egypt. Also, the mean value of sales revenues of large companies increased by 105.8% after the implementation of viral marketing as illustrated in figure 4. Accordingly, the research hypothesis is not supported in large companies.

These findings are in agreement with prior research studies (e.g. Bhatti, A. et al., 2020; Daif, R. and Elsayed, K., 2019; Ghanem, M.S., 2019; Deepa N. and Thenmozhi, S., 2019; Reichstein, T. and Bruschi, I., 2019; Anam, B. and Rehman, S.U., 2019; Mustikasari, A. and Widaningsih, A., 2018, Granata, G. and Scozzese, G., 2018; Rehman, S., 2018; Ramanathan, U. et al., 2017, Hamed, E. M., 2017; Hirvijarvi, F., 2017; Woerndl, M. et al., 2008; Klopper, H. B. 2002).

5. Conclusion.

The main findings of the study show that the implementation of viral marketing technique is a critical determinant of survival in the marketplace. Accordingly, Egyptian home electric appliances companies including small, medium, and large companies should implement the viral marketing technique due to its significant effect on increasing their sales revenues, maximizing their profits, gaining competitive advantage, as well as achieving growth and survival in the marketplace.

A surprising result of the study has shown that the effect of viral marketing implementation on sales revenues of large home electric appliances companies is greater than its effect on sales revenues of small and medium companies. An explanation for this result is that large home electric appliances companies which have large capital and strong financial position are able to produce various products with differentiated technologies. Moreover, they are able to promote and advertise such products to large audiences via social media and also can do sales promotions including price discounts, prizes, and twin pack bargains. This in turn leads to increased brand awareness, increased audience attention towards company's products, increased product purchase intention towards such products, increased sales revenues, and maximized profits.

6. Limitations and implications for future research.

The research on which this paper is based, like much social science research, is affected by several limitations. First, this study has been conducted in one country (Egypt). Second, the study focuses on one sector of industries, which is home electric appliances sector. Third, the present study focuses on the effect of viral marketing implementation on company's sales revenues only. Hence, the generalizability of findings needs more examination. In order to enhance the generalizability of the study findings, future researches need to be carried out on many other dimensions such as customers' satisfaction, consumer buying behavior, brand awareness or reputation.

The findings of the present study have several implications for manufacturing companies involved in implementing the viral marketing technique. For successful implementation, marketing managers need to understand the main critical success factors affecting the viral marketing implementation, as well as the barriers that hinder its implementation, in order to optimize implementation. Moreover, marketing manager should recognize the significant importance of implementing the viral marketing technique and its effect on increased company's sales revenues and maximized profits.

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