Journal of Accounting & Marketing
ISSN: 2168-9601

Bakr and Masson, J Account Mark 2017, 6:2
DOI: 10.4172/2168-9601.1000241

Research Article OMICS International

The Paradox of Variables' Effects on Channel Type

Mostafa Bakr[1]* and Henri Masson[2]

[1]Scientist and Independent Scholar
[2]Professor Emeritus, University of Antwerp, Belgium

Abstract

Purpose: This study aims to offer management with a structured decision-making approach to manage the conflicting impacts of different variables on the distribution channel type.

Problem statement: Different variables may possibly have opposite impacts on channel's type. When significant variables trigger the employment of direct channels, other significant variables may trigger indirect channels for the same product, leading to high complexity in channel decision making.

Design methodology approach: By means of a comprehensive survey covering 1400 retailers in Egypt and targeting three packaged milk categories, Structural Equation Modeling was used to group different variables, Logistic Regression was appliedto calculate the standardized beta coefficient of group variables.

Findings: Not all significant variables are equally important. Shelf life was found to be the most important variable with the highest standardized beta coefficient across 13 significant variables affecting distribution channel type.

Keywords: Channels of distribution; Food products; Egypt

Introduction

The complexity of distribution channel decision making becomes evident when different variables work in opposite directions. When a given variable triggers a direct channel of distribution, while another variable triggers an indirect channel type, decision makers have to manage the paradox of conflicting impacts of different variables. Previous empirical studies offered decision makers with variables found to be statistically significant. Previous studies offered as well broad and high-level grouping of variables, in addition to the rich conceptual interpretation of variables' significance and their logical relations with distribution channel type. Empirical works stopped at this level and did not make explicit propositions on how to take channel decisions when two groups of variables work simultaneously, but in opposite directions for a given product. This paper studies channel structures for different producers of different milk products in Egypt. The milk category clearly reflects the paradox of conflicting group variables with opposite stimulus to different channel types. Short shelf life and the temperature controlled environment for some milk products like chilled dairy trigger high levels of control by manufacturers and justifies direct channels of distribution. In the same time, purchase in small quantities and high purchase frequency of the same milk products require high logistical services and triggers the hiring of distributors and intermediaries. If it is believed that decision makers are taking channel decisions in a purely qualitative manner (Bucklin et al., 1996), therefore studying the paradox of group variables' conflicting impact on channel structure will be more appropriate to be done in an emerging market like Egypt, where resources are limited and the cost of correction of wrong channel decisions, if any, will not be easily absorbed by milk manufacturers. High conversion rates from unpackaged milk products to packaged milk products in Egypt [2] is one final reason which justifies making the study in Egypt. Making statistical inferences from the sample drawn from the study may provide chances for generalizing results applicability on other food manufacturers in other emerging markets. This paper is grouping variables into four main groups. The paper tests the propositions that different groups have opposite impacts on the channel type. The objective is to manage the complexity of conflicting impacts across groups through understanding which of the four group variables tends to have the highest impact on the channel type?

Literature Review

After studying 220 products coming from 167 manufacturers, Diamond [3] identified six typical product flows that would reflect all possible paths adapted by suppliers studied in his sample to reach their customers [3,4]. The six product flows are displayed in Appendix A.

The most obvious and clear proposition on how to manage variables with opposite impacts on channel's structure was raised by Bucklin et al. [1]. Bucklin's sample included 1019 strategic business units (SBUs). The study included 12 variables grouped under two broad services outputs: "Logistical and informational" in addition to one additional control group capturing the scale and shared market variables underneath. Bucklin et al. [1] stated that "the integrated model shows that higher end-user information needs produce an effect upon channel structure that is diametrically opposite from that of high logistical services needs."

Bucklin made an explicit comment regarding the mentioned conflict between opposite impacts when he stated that "These results suggest that if the end user needs for information and logistics increases in the future, channels with bifurcated (separate) structures for each output may become more prevalent." These comments remain propositions and final notes concluding the study without being empirically tested.

Other than Bucklin's et al. [1] study it was not evident that previous studies made any propositions on how to take channel decisions when different variables work simultaneously in different directions. Either the nature of the products in scope did not allow enough variability to reflect the claimed conflict across variables' impact like Anderson

***Corresponding author:** Mostafa Bakr, Scientist and Independent Scholar, Tel: +201001478625; E-mail: mebakr@yahoo.com

Received May 20, 2017; **Accepted** May 29, 2017; **Published** June 05, 2017

Citation: Bakr M, Masson H (2017) The Paradox of Variables' Effects on Channel Type. J Account Mark 6: 241. doi: 10.4172/2168-9601.1000241

and Coughlin's [5] study. Or the research objective was limited to the understanding of the significant variables only like Lilien's [4] study. Or the research objective was specific focusing deeply on one particular aspect of channel's structure like Wadinambiaratchi [6], El-Ansary and Stern [7], Etgar [8], Høst et al. [9], Towson [10], Aithal [11] and finally Xaba and Masuku [12].

Anderson and Coughlan [5] were mainly concerned about the distribution channel type appropriate for a given manufacturer interested in introducing his products to a foreign market. The results show that exporters tend to leverage existing channels of distribution for the introduction of new products. Differentiated products, as well as products characterized by high asset specificity, tend to be distributed through direct channels. "The fact that the analysis was restricted only to industrial products and one industry (semiconductor) undoubtedly reduces the amount of variation in data" [5]. Direct channels looked to be the dominant suitable approach for industrial products, demanding a high level of training due to differentiation and asset specificity. Accordingly, the conflicting impacts of different group variables were not probably observed in Anderson and Coughlan's study due to the mentioned lack of variability in data.

Lilien [4] study was comprehensive enough to include diverse variables which belonged to different groups, Lilien studied 131 industrial products. Variables found statistically significant were product complexity, the size of the firm, the stage in the product's life cycle, the size of an average order and the purchase frequency. Variables found statistically significant could be possibly grouped into different groups like Information group, logistical group, and size group, yet no clear or direct reference was made on how to manage potential opposite impacts of different group variables, possibly because the research objective was to understand the significant variables affecting channel type.

Other empirical studies could be characterized by an in-depth focus on one aspect of the channel structure. Wadinambiaratchi's [6] comparative study was mainly focusing on economic development and its relation to channel structure. El-Ansary and Stern [7] zoomed on power across channel members. Etgar's [8] concentrated on the level of control the channel leader exercises on other channel members in the distribution chain. Høst et al. [9] were primarily interested in the variables impacting the adoption of internet based marketing channels. Towson [10] identified the key factors impacting the supplier's decision to start an online direct sales channel. Aithal [11] studied factors impacting the length of channels in rural India. In the scope of food products, Xaba and Masuku [12] studied small farmers' decisions to market their food products. It was not evident as per our scanning to empirical works and the conceptual framework of channel structure that the paradox of conflicting variables' impacts was explicitly raised and discussed by previous scholars.

Methodology

Research design

This paper is studying the channels of distribution for packaged milk producers in Egypt. Channel decision making for milk products is quite a controversy and may not seem to be as straightforward as other products. Other products may reflect a clear dominance for one service group over the other. Like the frozen food products for example, where products are differentiated due to the temperature controlled environment, storage conditions are complex and require a high level of after sales service and direct sales support. Or backed food products as another extreme, which are more frequently sold in more retail shops compared to frozen food, without any or much information service support. Unlike these two products, milk products stay midway between two extremes, with the highend-user need for both logistics and information services in the same time.

Product categories in scope: Within the packaged milk category, three subcategories are studied to ensure data variability to allow for the the testing of some variables that would not have been possible to test in case of having only one product category in scope. These subcategories are chilled dairy, ultra heat treated (UHT) products, and powdered milk. This variability allows for different shelf lives (14 days for chilled, 180 for UHT, and 540 for powdered milk). The variability also allows for testing different storage conditions (temperature controlled for chilled, ambient conditions for powdered milk and both conditions for UHT). For each product category of the three mentioned subcategories, two brands were studied, mainly the two market leaders regarding market share.

Variables grouping: To assess the impact of different variables having opposite effects on the distribution channel type, high-level grouping was required to consolidate the 13 variables studied in the scope of this paper into four main groups. These groups are "Information," "Size," "Control" and "Logistics." "Information" group includes asset specificity, auxiliary services, and customer concentration. "Size" group included firm's size and Purchasing power. "Control" includes perishable product, the stage in the product life and safety. Finally, the group "Logistics" includes broad assortment, purchase frequency, purchase in small quantity, and distance. It is believed that safety and purchasing power are empirically tested for the first time in the context of channels of distribution.

The directness of distribution is measured through a binary dependent variable with two values, 0 for indirect channels of distribution and 1 for direct channels. Figure 1 lists all variables and all group variables. Appendix B lists, the survey questions, showing how each variable was operationalized, and from which source the relevant data was collected?

Research proposition

Hypothesis 1: Ho: there is no difference in the effect of each group variable on the directness of distribution. The four group variables (information, size, control and logistics) have similar and equal effects on the directness of distribution.

Total effect of group information=Total effect of group size=Total effect of group control=Total effect of group logistics

Data collection

Data was collected from both primary and secondary sources. The primary source of the data collection was the retailer selling the products in scope. A questionnaire was designed to collect data from retailers on some variables, while secondary sources were used for data collection for other variables. For the retailer's survey, data was collected through a professional sales team which belongs to one of the brands studied in the scope of this paper. The sales team managed to fill in the survey during their routine sales visits to retailers. It should be noted that retailers do not uncover data to unknown independent researchers for confidentiality purposes. Retailers expressed concerns that unknown researchers may belong to tax authorities or other governmental authorities. Moreover, the business relationship between

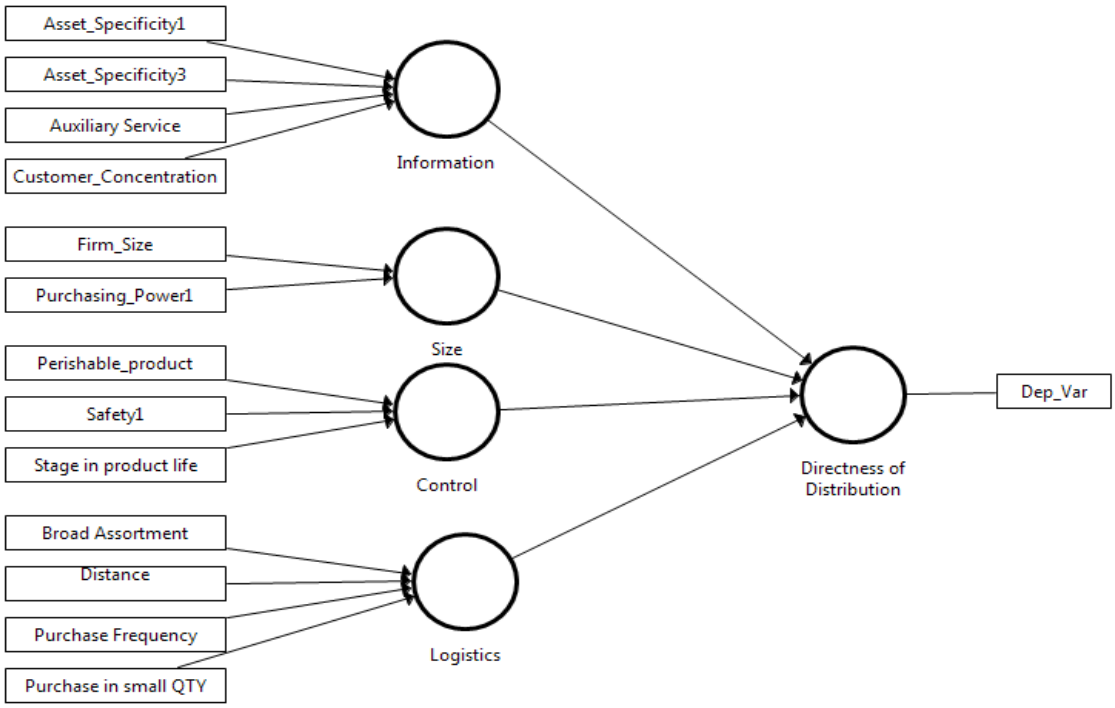

Figure 1: Distribution channel model- variables' grouping.

a given retailer and the concerned salesman secured the required time for explaining and filling in the survey.

Use of methods

Partial Least Squares Structural Equation Modeling (PLS–SEM) was used to group variables and to measure the significance and the relative importance of each variable/indicator forming the four group variables (logistics, information, size, and control). Smart PLS–SEM was also used to measure the significance of each of the four groups. Due to the binary nature of the dependent variable, Logistic Regression (LR) was used after that to measure the impact of each group on the directness of distribution. The standardized Beta coefficient is calculated to measure the relative importance of each group variable using the MS Excel function developed by King [13].

Results

Variables grouping and significance using SMART PLS-SEM

The relative importance of each indicator is measured by outer weight [14]. Our results indicate that the top three indicators are perishable products or shelf life followed by auxiliary service and firm size. Shelf life is clearly the highest significant contributor to the control group and the model in general. 11 out of 13 indicators were found statistically significant at the 1% probability of error level. The remaining two indicators were significant at the 5% level. The results reflect challenges facing channel decisions making due to the impact of numerous and significant variables.

Grouping did not allow any filtering or elimination as all groups were found significant at different levels and with opposite directional effects on the dependent variable. The "Control" group had the highest impact on the directness of distribution followed by "Information," "Size" and finally "Logistics." Out of the four group variables, the total effect of each of the three groups (control, information, and size) was found statistically significant at the 1% probability of error level. Logistics' group total effect on the directness of distribution was barely found significant at the 5% probability of error level. The top two groups regarding their effect and significance had opposite impacts on the directness of distribution. While the group "Control" had a negative correlation with the dependent variable, the group "Information" had a positive correlation. Table 1 lists the total effects for the four groups; the outer weights for the 13 indicators, their related T Statistics' and finally their respective P values

Group variables significance testing using Logistic Regression (LR)

The binary dependent variable calls for the application of LR to understand the impact of each group on the directness of distribution. The group variable logistics violated the linearity of logit assumption. The interaction between the variable and its Ln (natural log transformation) was found statistically significant at p=0.000. Accordingly, the group logistics was excluded from the final LR model.

The omnibus test model coefficient chi-square was found statistically sig at p=0.000 which gives confidence in the predictive capacity of the model. The Nagelkerke R Square value implied that 52% of the variability in the dependent variable could be explained by the independent variables. Finally, the Wald test scores indicated that three group variables: control, information, and size were found statistically significant at 1% probability of error level.

The negative sign of the control group beta coefficient indicates that packaged milk manufacturers' tendency to rely on direct channels of distribution decreases, as the shelf life in days increases, the product moves from launch to maturity stage, and finally the number of traffic accidents increases in a given region. On the contrary, the positive beta

Group Variables	Total Effect	T Statistics	P Value
Control	-0.514	20.231	0.000
Information	0.183	5.970	0.000
Logistics	0.048	1.939	0.053
Size	-0.085	3.547	0.000
Indicators			
Indicators (group variable)	**Outer Weight**	**T Statistics**	**P Value**
Asset_Specificity1 – Information	.161	2.311	.021
Asset Specificity 3 – Information	.286	3.929	.000
Auxiliary Service – Information	0.853	34.694	.000
Broad Assortment – Logistics	0.427	4.249	.000
Customer Concentration – Information	0.355	7.496	.000
Distance – Logistics	-0.291	3.229	.001
Firm Size – Size	0.767	9.829	.000
Perishable Product – Control	0.973	73.958	.000
Purchase frequency – Logistics	0.689	7.277	.000
Purchase in Small Quantity – Logistics	0.256	2.529	.011
Purchasing Power – Size	0.657	7.164	.000
Safety- Control	-0.347	8.440	.000
Stage in Product Life – Control	-0.118	2.609	.009

Table 1: PLS - Groups' Total Effects and Indicators' Outer Weights.

	B	Wald	Sig	Exp (B)	95% C.I for EXP (B)	
					Lower	Upper
Control	-2.016	198.310	.000	0.133	0.101	0.176
Information	0.419	29.159	.000	1.520	1.306	1.771
Size	**-0.202**	8.434	.004	0.816	0.712	0.936

Table 2: LR Outcome for the 3 Group Variables.

coefficient of the information group indicates that the manufacturer's tendency to rely on direct channels increases as the end user's need for information service increases. As a recall, information services operationalized in this paper is a composite of asset specificity, auxiliary service, and customer concentration. Control and information groups ranked the highest regarding their total effect on the directness of distribution based on their p values have different signs, indicating a conflicting impact on the channel decision to the same manufacturer.

Surprisingly group size had a negative beta coefficient, indicating a negative correlative between firm's size and purchasing power from one side and the directness of distribution from the other side. This outcome is not matching with Lilien's [4] results that size is positively correlated with the directness of distribution. Group "Size" as operationalized in this paper consisted of two indicators: firm's size (measured by the number of annual sales in tons for the brand/product in scope) and purchasing power in a given geographic region. Since the latter was reported on regional geographical level, it was found more or less similar across the six brands representing the six firms studied. For the firm's size, it was evident that the size of one manufacturer only outweighed the cumulative size of the other five manufacturers all together according to Ads (personal communication, June 17, 2015). This manufacturer was found relying more on indirect channels of distribution compared to direct channels. The positive relation between firm's size and the directness of distribution could be clearly observed for the rest of the five manufacturers, yet LR reported negative correlation might have been possibly impacted with the concentration towards indirectness of distribution for one giant manufacturer regarding size.

Table 2 lists beta coefficients, Wald test scores, significance levels and Exponential (B) for the three groups: "Control," "Information" and "Size."

Based upon LR Wald test scores, their levels of significance, and based upon PLS Group variables' total effect and their P values we tend to reject the null hypothesis that the four group variables (information, size, control and logistics) have similar and equal effects on the directness of distribution.

The paradox of channel decision making observed by PLS-SEM results is confirmed by LR outcome. The three group variables were found statistically significant with different beta signs indicating different stimulus to channel types. Standardized beta coefficients will be calculated to rank different group variables based on their strength of prediction. "The predictors are placed on a common scale so that each has the same mean and standard deviation. Variables having larger standardized beta weights (in absolute value) are considered to be stronger predictors in the equation" [13].

Standardized beta coefficient calculation using MS Excel and LR: King [13] used the mean of the predicted probability of the dataset, the un-standardized beta weight for a given variable, and the standard deviation to calculate the standardized beta for the same variable. Control group variables standardized beta weight came on top of all variables scoring (-0.453), followed by information group scoring (0.101), and finally size group scoring (-0.049). Appendix C lists the equations for computing standardized beta weights for all groups.

The reported results imply that a one standard deviation increase in Control decreases the predicted probability of employing direct channels by 45%, while a one standard deviation increase in Information increases the mean predicted probability of employing direct channels by only 10%. Finally, a one standard deviation increase in size decreases the mean predicted probability by only 5%. As per the standardized beta weight coefficient, it can be concluded that the effect of Control group is as much as 4.5 times the effect of the Information

group and as much as nine times the effect of the size group. This piece of information if made available shall put an end to any hesitation in the decision-making process due to the existence of three group variables found all to be statistically significant and with opposite impacts on the channel type. It is now clear that the "control" group singled out as the main and most important contributor among a set of significant contributors [14-17].

Managerial implications

The finding that the control group had the highest impact on the channel distribution type for milk products in Egypt could be primarily explained by the perishable nature of milk products which had its implications on the consumer, the retailer and accordingly the manufacturer. Consumer's concerns about freshness in addition to the retailer's concerns about potential write-offs in case of bad goods, might have possibly influenced the manufacturer to seek a higher level of control through direct and short channels to distribute products with short shelf life. The mean of predicted probability of using direct channels of distribution increases from a weak 3% for long shelf life products like packaged powdered milk (545 days), to a moderate 44% for medium shelf life products like packaged UHT (180 days), to a significant 70% for short shelf life products like chilled dairy (only 14 days).

The logical interpretation is that losses accrued due to the employment of long distribution paths, to distribute short shelf life products, are not recoverable. Financial losses would equal to the total product value if such products happened to expire in the distributor's warehouse or the retailer's stores. Losses will also touch the consumers and will affect the brand's images if the products expired on the shelf due to inappropriate channel type or long paths. Manufacturers tend to exercise higher levels of control through short, and direct paths for short shelf life products due to significant financial losses and unrecoverable brand damage. Losses related to safety are also believed to be non-recoverable either in their effect on the corporate reputation or their effect on the staff morale in the case of irreversible injuries. Safety, as measured by the number of traffic accidents per region, is also believed to correlate with the directness of distribution negatively. Last but not least, newly launched product if not introduced through the right and proper channels,the product launch may fail. Therefore, suppliers tend to exercise higher levels of control in the launch stage. To summarize, the three variables forming the control group (and most importantly shelf life) have impacts which could not be compensated for in case of using the inappropriate channel type or in the case of using long channel paths for the distribution of short life products. This may explain why the Control group variable had the highest effect on channel type compared to Information, Size and Logistics groups.

Conclusion

While the information group is positively correlated with the directness of distribution, the control group is negatively correlated with the same. This conflict of group variables' impact on the distribution channel type must leave the channel decision maker with a substantial level of complexity to manage while taking channel decisions. Is the right decision to use direct channels in response to end user's needs to high information services, which is the case of UHT products, which require temperature-controlled environment for the display of products inside chillers? Chillers require routine maintenance and after sales service usually referred to as Auxiliary Services. Or the right decision is to use indirect channels for the same UHT products with relatively long shelf life nearly six months? While both group variables are statistically significant with P values=0.000, the calculation of standardized beta coefficient shows clearly that the control group is much more important than the information group. The total effect of "Control" is as much as four times greater than the effect of "Information" group. Group variables found to be statistically significant are not equally important.

The group "Control" consisting of shelf life, the number of accidents per region and stage in product life is obviously the most important group. Shelf life is clearly the most impactful variable for milk products. One reason is the perishable nature of food products. Another possible reason is the non-recoverable losses in case of taking wrong channel decisions especially for products with short shelf lives. If the results derived from the milk products study could be generalized in other food products, then this will improve the channel decision making for food products, highly characterized by too many significant variables with opposite impacts on channel's structure.

To conclude, when all or numerous variables are found statistically significant, when a grouping of variables lead to different and opposite impacts, and finally when channel decision makers seek one criterion for food products to determine their channel type on, then it is shelf life. Short shelf lives trigger short and direct channel paths, and long shelf lives trigger long and indirect channel lives.

Limitations and recommendations

One limitation of this study is the limited number of products tested, which is believed to have impacted the directional relationship between size group and the dependent variable leading to the unexpected negative correlation, due to the substantial size of one of the six producers which happened to depend more on direct channels. A greater sample size including more producers is recommended for future studies to confirm the directional relationship between size and the directness of distribution. A greater sample sizeis also recommended to include more diverse brands other than milk products to confirm that milk findings are applicable for other and rest of food categories as well.

References

1. Bucklin LP, Ramaswamy V, Majumdar SK (1996) Analyzing channel structures of business markets via the structure-output paradigm. International Journal of Research in Marketing 13: 73-87.
2. El-Beheiry Z (2012) Juhayna food industries. Cairo, Egypt: NAEEM.
3. Diamond WT (1963) Distribution Channels for Industrial Goods. Ohio State University Press, Columbus, Ohio.
4. Lilien GL (1979) Exceptional paper-ADVISOR 2: Modeling the marketing mix decision for industrial products. Management Science 25: 191-204.
5. Anderson E, Coughlan AT (1987) International market entry and expansion via independent or integrated channels of distribution. Journal of Marketing 51: 71-82.
6. Wadinambiaratchi G (1965) Channels of distribution in developing economies. Business Quarterly 30: 72-82.
7. El-Ansary AI, Stern LW (1972) Power measurement in the distribution channel. Journal of Marketing Research 9: 47-52.
8. Etgar M (1977) Channel environment and channel leadership. Journal of Marketing Research 14: 69-76.
9. Høst V, Mols NP, Nielsen JF (2001) The adoption of Internet-based marketing channels. Homo Oeconomicus 17: 463-488.
10. Towson XL (2010) Coping with manufacturers' dilemma in the e-commerce era: Arelational model and a strategic framework. International Journal of E-Business Research 6: 52-69.

11. Aithal RK (2012) Marketing channel length in rural India: Influence of the external environment and rural retailer buyer behavior. International Journal of Retail and Distribution Management 40: 200-217.

12. Xaba BG, Masuku MB (2012) Factors affecting the choice of amarketing channel by vegetable farmers in Swaziland. Sustainable Agriculture Research 2: 112.

13. King JE (2007) Standardized coefficients in logistic regression. In: Annual meeting of the Southwest Educational Research Association. San Antonio, TX.

14. Hair JF, Hult GTM, Ringle CM, Sarstedt M (2016) A Primer on partial least squares structural equation modeling (PLS-SEM). Los Angeles, CA: SAGE Publications.

15. Distance Calculator (2015) Distance between 6th of October city, Giza Governorate. Egypt and Helwan, Cairo Governorate, Egypt.

16. Egyptian Central Authority for Public Mobilization and Statistics (2014) Key indicators for the income and consumption for 2012/2013.

17. National Center for Social and Criminological Research (2014) The annual report: Road accidents in Egypt.

Citation: Bakr M, Masson H (2017) The Paradox of Variables' Effects on Channel Type. J Account Mark 6: 241. doi: 10.4172/2168-9601.1000241

Appendix A

Distribution Channel Paths

After studying 220 products coming from 167 manufacturers, Diamond (1963) identified six typical product flows that would reflect all possible paths adapted by suppliers studied in his sample to reach their customers (Diamond, 1963 as cited by Lilien, 1979).The six product flows are displayed in figure 1 hereunder.

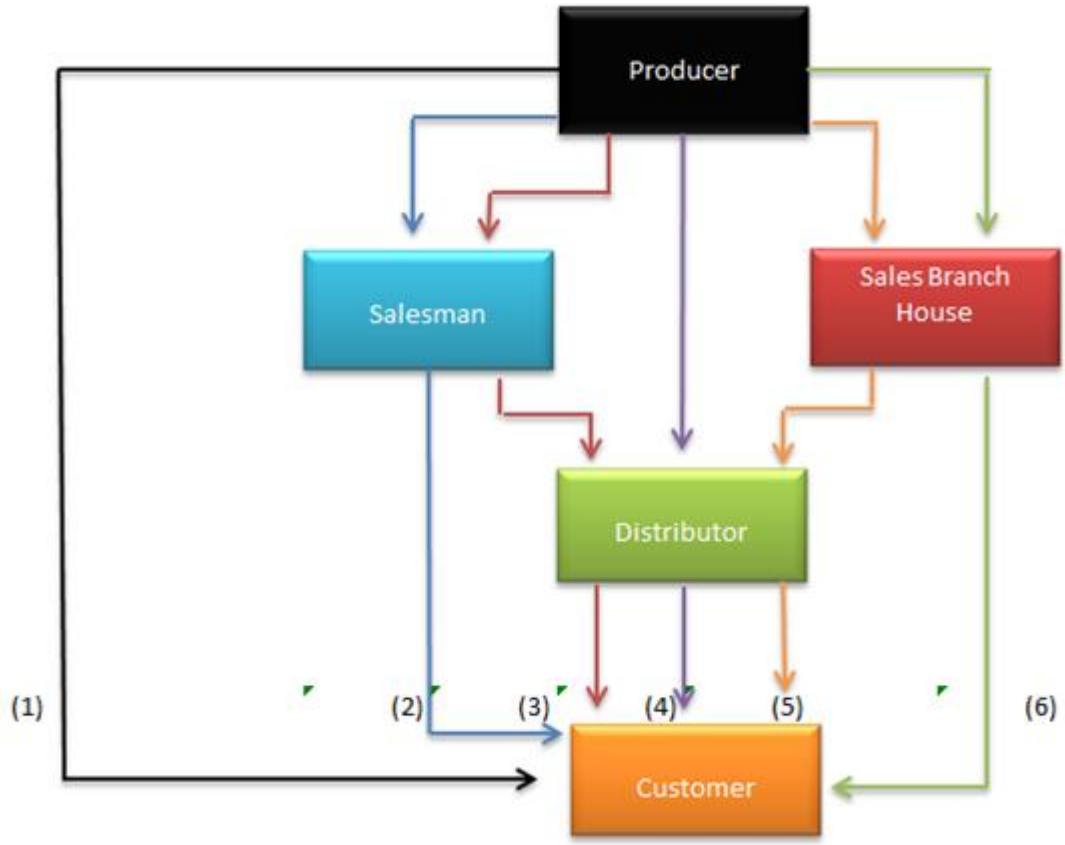

Figure 1: The Most six common industrial channels.

Source: Diamond (1963) as cited by Lilien (1979)

Out of the six possible paths, three are considered to be direct and three are indirect. Generally speaking, any path that passes through an intermediary, whether a distributor or a wholesaler is considered to be an indirect path. Any path from the supplier to the customer that bypasses an intermediary is considered a direct path. Diamond's 6 possible paths did not include the e-commerce channel path , which could be still direct if the manufacturer decided to respond to electronic orders received on own web portal and ship to consumers directly, or it could be an indirect path if the manufacturer decided to use an intermediary.

Appendix B

Research Variables

Group Variable	Variable	Source	Question
Logistics Services	Purchase in Small Quantity	Retailer's Survey	Upon purchase from the seller, what is the quantity purchased? Convert all quantities into pieces. If one case includes 12 pieces, therefore insert 12 pieces in case of purchasing 1 case.
Logistics Services	Distance	Secondary Sources – Distance Calculator	What is the distance in KM between the manufacturer and the retailer?
Logistics Services	Purchase Frequency	Retailer's Survey	What is the frequency of purchasing this product from the seller in your retail outlet? If you tend to purchase daily, then insert 30, if you tend to purchase every other day, then insert 15, if you tend to purchase twice a week, then insert 8. If others, please specify
Logistics Services	Broad Assortment	Retailer's Survey	Does the manufacturer offer a broad range of assortment compared to other manufacturers? 0) the manufacturer does not offer a broad range of assortment. 1) Yes the manufacturer offers a broad range
Information Services	Customer Concentration	Retailer's Survey	What is the type of the retail outlet? 0) Traditional Trade. 1) Super Market. 2) Wholesaler. 3) Key account
Information Services	Auxiliary Services	Retailer's Survey	Is the product stacked and displayed on ashelf or in chillers in your retail outlet? With thepoint of sale material or without apoint of sale material (POSM)? 0) On shelf without POSM. 1) On theshelf with few POSM. 2) On theshelf with a lot of POSM. 3) In chillers without maintenance. 4) In chillers once a year maintenance. 5) In chillers twice a year maintenance. 6) In chillers quarterly maintenance. 7) On shelf without POSM and in chillers with once a year maintenance.

Information services	Asset Specificity 1	Retailer's Survey	Did the salesman provide you any training in your retail outlet on how to **store** the product? 0) Very Little. 1) Little. 2) No Training. 3) High training. 5) Very high training.
Information services	Asset Specificity 3	Retailer's Survey	Did the salesman provide you any training in your retail outlet on how to **sell** the product? 1) Very Little. 1) Little. 2) No Training. 3) High training. 5) Very high training.
Control	Stage in the Product Life	Retailer's Survey	Since how many months this product has been launched? 0) Less than one month. 1) 1:6 months. 2) 6:12 months. 3) 12:24 months. 4) More than 36 months.
Control	Safety 1	Secondary Sources – National Center for Social and Criminological Research (2014)	What is the number of traffic accidents per governorate in Egypt?
Control	Perishable Product	Retailer's Survey	What is the shelf life of the product in days? If two weeks then insert 14. If six months then insert 180. If one year, then insert 365
Size	Firm's size	Secondary Sources – Personal Communication	What is the annual sales in tons for each of the six companies selling the six products in the scope of this study?
Size	Purchasing Power	Secondary Sources – Egyptian Central Authority for Public Mobilization and Statistics (2014)	What is the average annual household **income** for each of the four geographical regions studied in the scope of this paper? (Cairo, Delta East, Delta West and Upper Egypt)

Appendix C

Standardized Beta Weight

King (2007) developed the LR equation for the calculation of the standardized beta weight as follows:

Standardized Beta Weight =(1/(1+EXP(-(LN(A2/(1-A2))+0.5*A3*A4))))-(1/(1+EXP(-(LN(A2/(1-A2))-0.5*A3*A4)))), where

A2 = Mean of the predicted probability of the dataset

A3 = unstandardized beta weight for a given variable

A4 = Standard deviation for a given variable

	Control	**Information**	**Size**
Mean of the predicted probability	0.406993	0.406993	0.406993
Un-standardized beta weight	-2.017	0.419	-0.203
Standard deviation	1.000291	1.000369	1.000360
Standardized Beta Weight	**-0.453**	**.101**	**-0.049**

Standardized beta equation for the group variables (Control, Information and Size):

1) Control Standardized Beta Weight: = (1/(1+EXP(-(LN(A2/(1-A2))+0.5*A3*A4))))-(1/(1+EXP(-(LN(A2/(1-A2))-0.5*A3*A4)))) = -.453

2) Information Standardized Beta Weight: =(1/(1+EXP(-(LN(A8/(1-A8))+0.5*A9*A10))))-(1/(1+EXP(-(LN(A8/(1-A8))-0.5*A9*A10)))) = .101

Size Standardized Beta Weight: =(1/(1+EXP(-(LN(A20/(1-A20))+0.5*A21*A22))))-(1/(1+EXP(-(LN(A20/(1-A20))-0.5*A21*A22)))) = -.049