Understanding the Impulsiveness Effect of a Web Design on Online Fashion Stores*

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***Abstract*—E-commerce had been a window of consumer-retailer and business-to-business relationship. It had changed supply chain design in last four decades. A Website display, as one of strategic decision of an e-commerce, has been a competitive advantage to win the market. Moreover, impulsive buying had recognized as cognitive natural flaw which had given an advantage for both retailer and consumer. Sometimes, the tremendous increment of the number of internet access on an e-commerce site is not accompanied by increment of buying. Meanwhile, the study about the influences of a web display to impulse buying behaviors had been written so little. In this paper, a preliminary research about the influences of a web display to impulse buying behaviors is conducted. The study is conducted on online fashion stores in Indonesia. This paper depicts the development of sixteen display attributes for accessing impulse buying on online fashion stores. Twenty (20) attributes has been developed from literature survey and interview. Then, a survey has been given to 150 respondents to determine the display's attributes that influenced to impulsive buying. A factor analysis has been run to sixteen (16) attributes that have significant influence to Impulse Buying and four factors have been developed. Structural Equation Model is performed to understand the impact of each factor and attributes toward impulsive buying respond. Based on the model, Service Factor (0.89) and Supporting Factors are the most influencing factors. Meanwhile, Model Appearance, and Pop Up Voucher are the most influencing attributes toward impulsive buying.**

Keywords— Impulsive Buying, Display, E-commerce

I. INTRODUCTION

Online shopping store growth significantly after the development of World Wide Web, electronic data interchange and electronic funds transfer [1]. The growth had changed overall status of supply chain management. The increasing of online shopping store had change distribution network of a supply chain. Online shopping store cut the inventories of brick-and-mortars store, even more shifting the physical store into virtual store able to pool the risk of inventory in the central warehouse or distribution center [2]. This particular practice has created a competitive advantage to the retail business with efficient type of supply chain. An efficient supply chain that use by retail business caused large inventory due to its market needs of product availability. Nowadays, online shopping stores are not only available for non-perishable goods such as furniture, and electronics, but also selling perishable goods, fast moving goods, and apparel. Even more, the US market sales on apparel is predicted to reach 17.2% of total US online shopping value [3].

South East Asia has enormous potential growth of emerging market of retail business since the transaction value of online shopping reached 1-2% of total retail transaction, compared to South Korea (16%), and global (8%) [4]. The potential growth of online shopping transaction is described by the growth of the number of online stores in big market countries in South East Asia. Indonesia and Thailand would be the most attractive markets with the greatest opportunity due to demographic bonus [5]. Meanwhile, established country such as Singapore had already sit on 13th ranked on Global Retail E-commerce Index with its attractiveness score is 41.5 [5]. According to Acommerce [4] and AT Kearney [5], one of the most popular product to be sold in e-commerce channel globally is fashion and apparel (76% of global respondent had bought it from online shopping).

Fashion and apparel are showing consumer lifestyle and identity. In emerging countries, seems the demands of fashion and apparel is high in prosperous cities which have little access to their major fashion center, such as in Indonesia [4]. In the other hand, social media and messaging application propel the growth of fashion and apparel transaction in online shopping. Due to its enormous variety of product and consumer customization, a tendency to buy this particular product from brick-and-mortars is supposed to be stronger than online shopping. Online shopping customer has no chance to try the fashion and apparel that usually offered in off-line store. Fashion and apparel is a seasonal type of goods that has short product lifetime, therefore an inventory control become a major challenge.

Online shopping store cope the flaw of brick-and-mortar store in-terms of location and inventory without eliminate the recreational activity of browsing product inside the store [6]. Therefore, impulsive buying often happens during online shopping [7]. Impulsive buying, the sudden and urge buying a particular product without any pre-shopping intention, has become a major transaction in store [8]. Therefore, increasing impulsive buying transaction has been a powerful strategy to increase the competitive advantages and win market's competition [9]. Impulsive buying has been influenced by product

layout and display [10]. Microsoft Indonesia stated that information inside online shopping stores shall act as effective and efficient communication media internal and external for understanding consumers need because of lack of direct communication [11]. Consequently, online shopping stores shall be designed to provide important one-way communications to enhance sales and impulsive buying.

Some research [12-14] had also created a basic foundation of information attributes on website that initiate impulsive buying respond, detail attributes of online shopping fashion retailer is not explored yet. Accordingly, further research is needed to understand the information provided by fashion web store that stimulate the impulse buying on online shopping. This initial research will build a reference to understand consumer behavior inside online shopping store. Moreover, in longer terms, it will be a foundation for the development of online shopping store display design as strategic decision of online store business.

II. Research Method

A. Concept Model Framework & Variables

The latest model of impulse buying refers to S-O-R model [13] [14][15] where the model consist of stimulate variable, organism variable (decision maker), and impulsive buying respond. In this model, the relationship between stimulate variable and respond would occur via latent variable of organism. Fig. 1 described S-O-R Model [15].

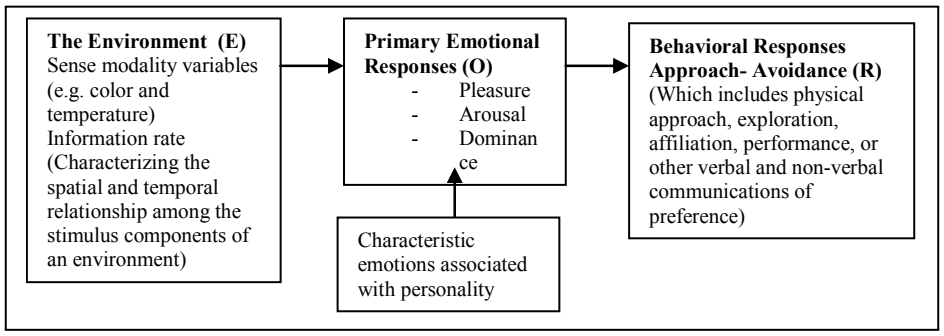

Fig. 1. The latest S-O-R Model [15]

In this research, the stimulate variables are assumed to have direct influence to respond, due to the concept of impulsive buying that process the stimulus spontaneously [13]. Stimulate variables are drawn from selected display of certain information that appears in online shopping store. The selection process to get the information attributes is done through literature review, interview, and observations. Interviews and observations were conducted to 12 target market consumers of online shopping fashion store which had at least once bought an item from fashion online store impulsively. Interview has stopped after twelfth respondents because there is no any new attribute is identified afterwards. Twenty (20) proposed stimulus attributes that are covering information about product, business process, and marketing mix is showed in table 1. Those stimulus attributes become foundations of questionnaire development.

B. Data Collection

Before data are collected, questionnaire, as mentioned in section II.A, was tested for its validity and reliability as a measurement tools. The test was conducted to 30 persons. It was declared as reliable (Cronbach-Alpha score: 0.9> 0.7) and valid (Pearson Correlation >0.463, with N=30) under $\alpha = 0.05$. Thus as measurement tools, the questionnaire is considered to yield data that are valid, reliable, and less bias.

Questionnaire is filled up by 150 consumers of online fashion store in Indonesia. Inside the questionnaire, there is a section to check consumers' impulsive respond. To spread up the questionnaire, purposive sampling method is used because there is a selection of respondent [16]. The respondents are consumers who are regularly buying via online fashion store and are matching with target market of online fashion store. Respondent profile is as described in Fig. 2. The majorities of the respondents is early adult and are spreading around major cities of Java.

Data collected from those respondents were than examined for their adequacy to be processed via Factor Analysis. Data have fulfilled the rule of thumb because the amount of data is larger than five (5) times attributes [17]. Factor Analysis is used to cluster the stimulant attributes and to establish factors that is influencing impulsive buying. Afterwards, Structural Equation Modeling (SEM) is performed to understand the impact of each factors (and attributes) towards impulsive buying respond.

TABLE I. RESUME OF STIMULATE ATTRIBUTES

No	References	Keywords	Definitions	Stimulus Attributes	Notes
1	Literature Study [12] [13] [14]	Sales	Information of discount given to off-season product and limited stock product.	Discount	Information of number of discount given to a product.
2		Promotion	Information of gratification given to consumer after certain purchase.	Promo	Information of promotion given to certain product (exp. buy 1 get 1)
3		Ideas	Web-site capability to give shopper alternative shopping products.	New Product	Information of new products
4		Suggestions	Web-site capability to give shopper alternatives based on consumer browsing history (cookies).	Product Category	Option of product clustering based on certain category
5				Product Recommendation	Option of product recommendations
6		Product Availability	Information of product availability (number of stock and color variant)	Product Availability	Information of stock available per color and sizes
7		Visual Appeal	Web-site capability to enhance visual of a product	Various Angles Picture	Various angles picture available for a product
8				Zoom In	Capability of zooming in a picture
9	Interview	Price	Web-site information of pricing	Price	-
10		Security	Web-site information of payment security	Credibility	-
11		Confirmation	Web-site capability of giving confirmation towards certain buying	Payment Confirmation	Information of payment confirmation
12				Delivery Confirmation	Information of delivery confirmation
13		After Sales Services	Information of after sales services and complain handling	Refund Policy	Information of refund policy
14				Return Policy	Information of return policy
15		Advertisement	Advertising of a fashion on-line store's product in another site	Advertisement	-
16		Payment Methods	Web-site information of alternative payment methods	Payment Methods	-
17		Installment	Web-site information of installment availability towards certain products	Installment	-
18	Observations	Voucher	Pop-up voucher feature when opening a home page of an on-line store	Voucher	-
19		Model Appearance	Model Appearance	Model Appearance	-
20		Product Specification	Information of product specification	Product Specification	-

III. RESULT AND DISCUSSION

A. Impulsive Respond

As depicted in Fig. 2, 39% of the respondents are potentially heavy impulsive buyers since their percentages of impulsive buying to total buying are above 30%. This result is emphasizing [9] that impulsive buying is one of the important retail's strategic decision and competitive advantage without neglecting the limitation of the online shopping store.

B. Impulsive Factor

The statistics correlation between stimulus attributes and respond variables are performed to check the association of each attributes toward the respond. Several stimulus attributes are having weak correlation therefore those attributes are excluded in the next step. Subsequently, Factor Analysis with PCA (Principal Component Analysis) methods is conducted with Varimax Rotation. Some attributes are deducted due to low Kaiser-Mayer-Olkin score. Only 15, out of 20 attributes, are significantly clustered into 4 factors (see Table 2).

It is shown in table 2 that impulsive buying in Indonesia is not far from fulfilling the desire of gratifications which is described in Marketing factors. In addition, consumers' perception on information of product quality is also influencing impulsive buying. The impulsive buying respond is enhanced with the information of business services quality and information of supportive factors.

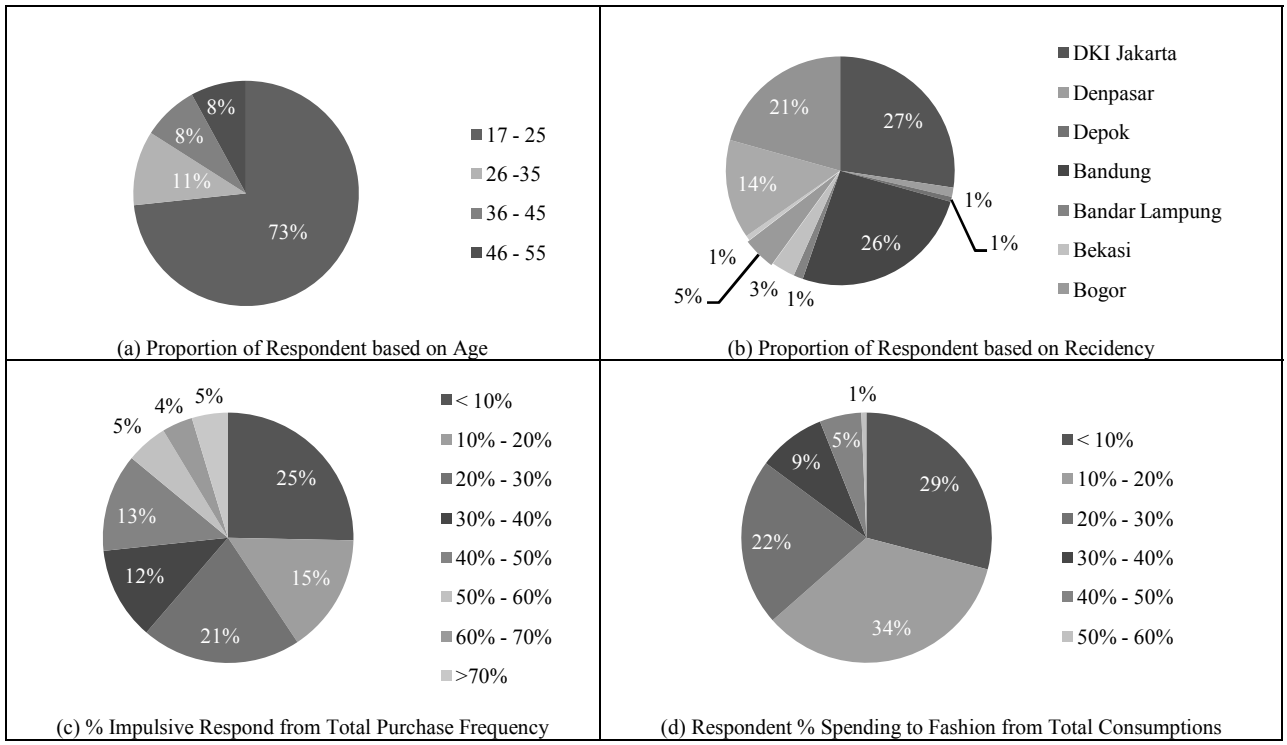

Fig. 2. Respondent Profile

C. Impulsive Mathematical Model

Mathematical model is conducted to outcome factors and attributes via SEM. SEM is used to understand the relationship between factors (and its attributes) and impulsive respond. SEM is also capable of measuring the collinearity among factors. SEM is also being able to develop a multivariate mathematical model, even though factors are non-measurable data. For testing the model fit and validation, Relative Fit Indices (RFI), Tucker-Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA) are used.

TABLE II. RESUME OF FACTOR AND ATTRIBUTES IMPACTING IMPULSIVE BUYING

No	Factor Name	Attribute 1	Attribute 2	Attribute 3	Attribute 4
1	Marketing	Discount (BD)	Promo (PROM)	Product Specification (IS)	Price (HP)
2	Services	Credibility (KRE)	Refund Policy (REF)	Return Policy (RET)	Delivery Confirmation (KONKIR)
3	Product (TampProd)	Product Recommendation (PR)	Various Angle Pictures (FBS)	Zoom In (ZI)	-
4	Supportive (Penunjang)	Advertising (IK)	Installment (SC)	Model Appearance (PMOD)	Voucher (VOU)

Initial mathematical model is performed by connecting all factors directly to the respond variables and by considering correlation and covariance among factors (see Fig. 3). Inside the initial model, Supporting, and Service Factor are having positive influence towards the respond. However, Marketing is having negative influences toward respond. Product Factor is having zero influence toward Impulsive Respond. However, after crosschecking, high multicollinearity (> 0.3) occurs to Marketing, Service, and Support Factor. Therefore, the mathematical model is revised (see Fig. 4) by eliminating the multicollinearity. Figure 4 shows us that Marketing, and Product are not directly influencing the impulsive buying decision. Meanwhile, Supporting, and Service Factor are directly influencing the impulsive buying positively.

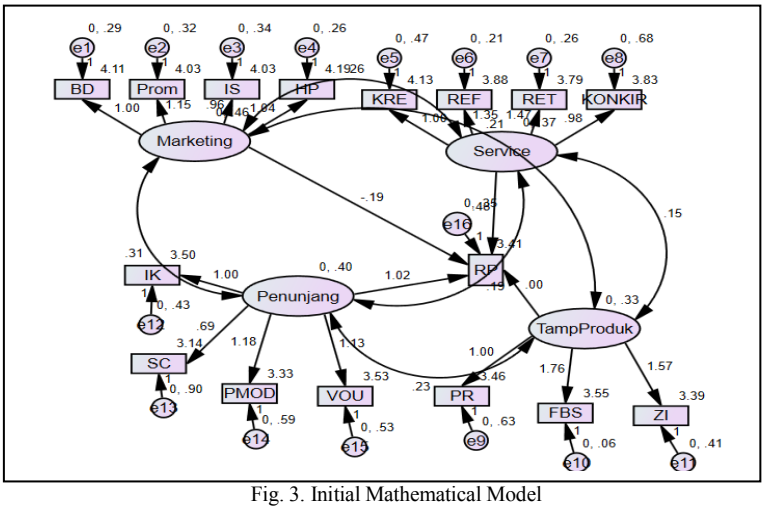

Fig. 3. Initial Mathematical Model

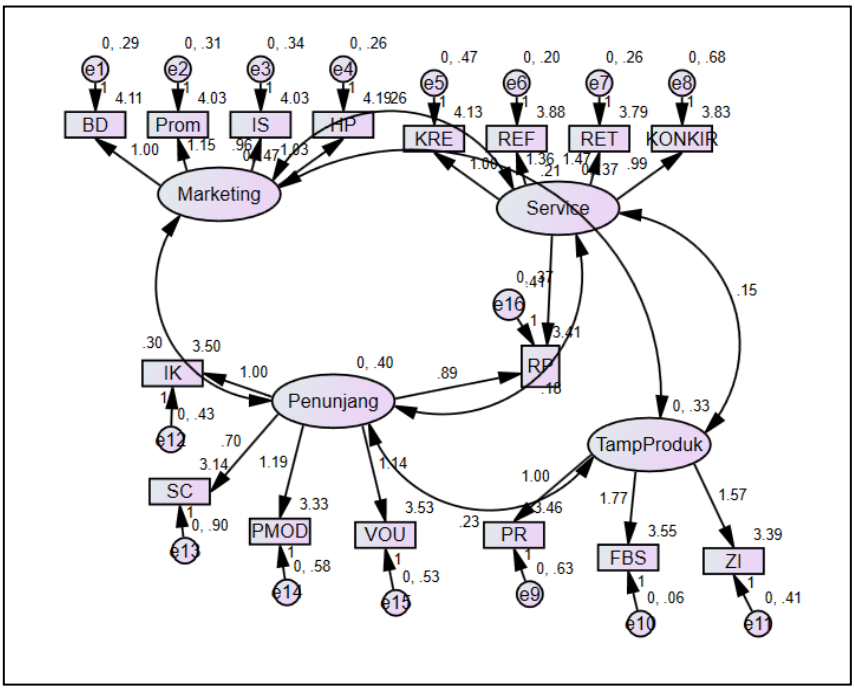

Fig. 4. Improved Mathematical Model

As shown in Table 3, Model Fit Table, the less value of RMSEA, higher RFI value, and higher TFI value is owned by improved mathematical model. The smaller RMSEA and higher RFI and TFI are indicator of better model fit. Therefore, improved mathematical model is better than initial mathematical model to represent the data.

TABLE III. MODEL FIT TABLE

No	Mathematical Model	RFI	TFI	RMSEA
1	Initial	0,764	0,835	0,109
2	Improved	0,768	0,840	0,107

D. Managerial Implication

Based on the proposed mathematical model depicted in Fig. 4, there are two information display factors that are directly influencing impulsive buying: The factors are Supporting Factors (factor loading: 0.89) and Service Factors (factor loading:

0.37). Increasing a level of Supporting Factors will significantly increase the impulsive respond inside a particular store. Meanwhile, the greatest impact attributes of impulsive buying in Supporting Factors are lied Model Appearance (factor loading: 1.19), Advertising (factor loading: 1.00) and Vouchers (factor loading: 1.14). It means that store management shall emphasize the Model Appearance, Advertising and Voucher to increase the impulsive performance of the online fashion store.

Apparently, consumer is fitting the apparel and outfit via the look of that particular product on the model. Consumer is associating him/her self to the model. Pop-up voucher available when opening the retail home-page is considered as fun gift given to consumer which contained gratifications. The gratification of discount through voucher is stronger rather than the discount itself because the fun and personal communication build through the pop-up application.

E. Research Limitation

Since data are collected in Indonesia, Confirmatory Factor Analysis (CFA) might require to be conducted to the application of proposed model in other countries. In addition, validity and error analysis are still needed to complete the analysis and research so that the managerial implication and analysis might more accurate and applicable.

IV. CONCLUSION

Understanding the impulsiveness impact of an online fashion store is proposed be conducted from the information of products, business process, and marketing strategy which contained in the website display. Four factors had been grouped from sixteen attributes. They are Marketing Factor, Service Factor, Product Display Factor, and Supporting Factor. Marketing factors refers to: Discount Nominal, Specification Information, and Product Price. Service Factor refers to Website Credibility, Refund, Return, and Delivery Confirmation. Product Display Factor refers to Product Recommendation, Various Angle Pictures, and Zooming Feature. Meanwhile Supporting Factors are Advertising, Installment, Pop-up Voucher and Model Appearance.

Proposed mathematical model indicating that to improve the impulsiveness impact of an online fashion store, management shall put higher attention to the Model Appearance and availability of Pop-up Voucher. To complete this research, proposed mathematical model needs further validations.

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REFERENCES

[1] .Y Tian, and C. Stewart, "Chapter 1.1 History of E-Commerce," available online: http://www.irma-international.org/viewtitle/9447/ , accessed October 31, 2015.

[2] G. Yang., "Relationship between E-commerce and Supply Chain Management", in Advances in Technology and Management, AISC 165, 2012, pp. 653-658.

[3] Nonim, "Apparel Retailers and Ecommerce: Direct Marketers Dominate", available online: http://www.emarketer.com/Article/Apparel-Retailers-Ecommerce-Direct -Marketers-Dominate/1012671/, accessed October 31, 2015

[4] Nonim, "How Technology Reshapes the Luxury and Fashion Industry – 3rd Southeast Asia Retail Expansion Summit", available online: http://www.acommerce.asia/3rd-sea-retail-expansion-summit-how-technology-reshapes-the-way-brands-produce-sell-and-operate/, October 25, 2015

[5] AT Kearney, "The 2015 Global Retail E-Commerce Index ™ : Global Retail E-Commerce Keeps on Clicking", available online: https://www.atkearney.com/documents/10192/5691153/Global+Retail+E-Commerce+Keeps+On+Clicking.pdf/abe38776-2669-47ba-9387-5d1653e40409 , 2015

[6] I Phau, and C.C. Lo, "Profiling Fashion Innovators: a Study of Self-Concept, Impulse Buying and Internet Purchase Intent", in Journal of Fashion Marketing & Management, Vol. 8 No. 4, pp. 399-411.

[7] K. Vojvodic, and M. Matic, "Challenges of E-Retailing: Impulsive Buying Behavior", in Challenges for The Trade of Central and Southeast Europe, pp. 155-171, September 2014.

[8] K.M Stilley, J.J.Inman, and K.L.Wakefield, "Planning to Make Unplanned Purchases? The Role of In-Store Slack in Budget Deviation", in Journal of Consumer Research Inc. Vol. 37, pp. 264-278, 2010.

[9] D. Kollat, and R. P. Willet, "Is Impulse Purchasing Really Useful Concept for Marketing Decision", in Journal of Marketing, Vol. 33, No. 1, pp. 79-83, 1969.

[10] C. Amos, G.R. Holmes, and W.C. Keneseon, "A Meta-Analysis of Consumer Impulse Buying", in Journal of Retailing and Consumer Services, Vol. 21, pp. 86-97, 2014.

[11] Microsoft Indonesia, "Bisnis E-commerce di Indonesia Begitu Berkembang Saat Ini", available online: http://swa.co.id/business-update/microsoft/bisnis-*e-commerce*-di-indonesia-begitu-berkembang-saat-ini, accessed October 31, 2015

[12] S. Dawson, and D. Minjeong Kim, "Cues on Apparel Website that Trigger Impulses Purchases", in Journal of Fashion and Marketing: An International Journal, Vol. 14, Issue 2, pp. 230-246, 2010.

[13] Y. Liu, H. Li, and F Hu, "Website Attributes in Urging Online Impulse Purchase: An Empirical Investigation on Consumer Perceptions", in Decision Support System 55, pp. 829-837, 2013.

[14] S. Dawson, and D. Minjeong Kim, "External and Internal Triggers Cues of Impulse Buying Online," in Direct Marketing: An International Journal, Vol. 3 Iss 1, pp. 20-34, 2009.

[15] V. A. Vieira, "Stimuli-Organism-Respond Framework: A Meta-Analytic Review in the Store Environtment", Journal of Business Research, Vol. 66, Issue 9, pp. 1420 – 1426, 2013.

[16] M. B. Salomon, "Consumer Behavior: A European Perspective, 3rd edition", New York: Prentice Hall, 2007.

[17] J.F. Hair Jr, W.C. Black, B.J. Babin, and R.E Anderson, "Multivariate Data Analysis", 7th edition, Pearson Prentice Hall, USA, 2010.

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