6.10 教师带领学生发表论文情况

本专业重视学生科研能力、探究能力的培养。教师成立了多个科研团队，吸纳对科研有兴趣、有潜力的学生进科研项目课题组担任科研助理，近几年来由老师和学生共同发表相关论文41篇，其中发表在国际学术会议上的论文有30多篇。

（一）期刊

1.钟肖英,薛宇航,谭筱琦. 广东省应用型本科院校电子商务专业创业教育调查及实证分析[J]. 经贸实践,2016(7).

2.施永裕，周秀鸿，郑伽旬，林茹，刘可德.“共享经济下行为意图影响因素之探讨-以打车软件为例.中山大学南方学院论丛,2016(6).

3.赖铠宜，施永裕，萧裕中,刘可德,移动支付的接受影响因素——对TAM与信任的探讨.中山大学南方学院论丛,2016(5).

4.施永裕，谢舒艺,刘可德.第三方支付服务认知价值影响因素探讨.中山大学南方学院论丛,2015,(２).

5.Chieh-Min Chou, Yung-Yu Shih (2014).How to Promote Adoption of Complex E-Services Innovation? - An Institutional Factor Perspective[J]. International Business Research，2014(10).

6.白诗琪.中国水产业出口现状及国际竞争力实证分析[J].全国流通经济,2018.

7.屠毅仁.探究“一带一路”倡议下我国与沿线国家的贸易格局重构[J].财经界（学术版）,2019.

8.陈燕琴.完全学分制下对学生管理与思想政治教育探讨[J].中山大学南方学院论丛，2018.

9.屠毅仁.我国国际物流与跨境电商相互影响实证分析[J].现代经济信息,2018.

（二）学术研讨会论文

10.曾丽玉，朱穎琳.“基於UGC模式下探討影響消費者對旅遊APP轉換意願的研究－－以Z世代消費者為例”,2019行销研究学术研讨会，中国文化大学，台北，2019.

11.李雨琪.“男性刻板印象对女大学生电脑维修人员的满意度研究”,2019行销研究学术研讨会，中国文化大学，台北，2019.

12.曾丽玉，赖籽言.“探究体验幸福感对消费者体验分享意愿的研究”,2019行销研究学术研讨会，中国文化大学，台北，2019.

13.曾丽玉，张嘉嘉.“基于社会认知理论探讨用户对应于付费课程打卡行为的影响研究”，2019行销研究学术研讨会，中国文化大学，台北，2019.

14.曾丽玉，袁妙琼，林泓蓉，何倩婷，龙惠明.“运用城市公共文化空间及慢生活视角探析广州方所书店体验行销对顾客满意度之影响”，2016台湾感性探讨会感性与创意实践，科技部，台北，2016.

15. Hung-Che Wu, Ching-Chan Cheng, Chi-Han Ai, Guowei Chen (2019)，“Relationships between restaurant attachment, experiential relationship quality and experiential relationship intentions: The case of single friendly restaurants in Taiwan”，Journal of Hospitality and Tourism Management，2019(40)50-66.

16.施永裕，谢舒艺，刘可德(2016)，“第三方支付服务认知价值影响因素探讨”，2016知识社群国际研讨会,中国文化大学，台北。

17.郑伽旬，施永裕(2017)，“基于R语言环境下网络口碑情感分析——以京东商城为例”，“大数据、科技与媒体的未来”跨界学术论坛,华南理工大学，广州。

18.Hsiao, Yu Chung, & Han Qing Li(2017). Effects of Blogger Characteristics and Blog Style on Consumers’Purchase Intention. 2017 3rd International Conference on Industrial and Business Engineering, Hokkaido, Japan.

19.Qiuling Yao,，Longfei Chen（2015），“The Application of the IOT for Minimizing Consumption in Smart Home”，The 15th International Conference on Electronic Business (ICEB 2015)，Hyatt Regency Hotel，CUHK，Sha Tin，Hong Kong.

20.Longfei Chen，Susu Lu，Yifan Zou(2016)，“A Continuous Learning Mechanism for Online Hospitality Training”,2016 International Conference on ICHTL，Jinwen University of science and technology，New Taipei,Taiwan.

21.Longfei Chen，Shujun Chen（2017），“A RFID-based JIT Application for Least Waiting Time for Dynamic Smart Diet Customers”，2017

International Conference on Information Science and Technology [IST2017], Wuhan.

22.Li-Yu Tseng, Min-Jing Mai（2016）, “Animated spokes-characters and brand match-up on affecting the operation mode of Chinese animation”,2016International Conference on Social Science and Management(ICSSAM 2016), Osaka, Japan

23.Li-Yu Tseng,Qi-Tao Lao(2016),“Exploratory research of the career plateau from the middle and lower level managers in A retail company, This Is A Template For Conference Abstract”.2016International Conference on Social Science and Management(ICSSAM 2016), Osaka, Japan

24.Lin Jian-Bang,Chen Qiao-ling(2016)“A two-stage intelligent model for personal credit loans default prediction by using SOM and PH”. 2016International Conference on Micro Nano Devices, Structure and Computing Systems.Prague, Czech republic

25.Lin Jian-Bang, Chen Qiao-ling（2015）“Integrating of Business Intelligence and CRM in Banks: An Empirical Study of SOM Applied in Personal Customer Loans in Taiwan” 2015IFUZZY(IFUZZY2015) Yilan, Taiwan

26.Cheng-Hsin Chiang, Yi-Ching Liaw, Rung-Tai Wu（2017）“Patent Analysis for the Formulation of Technology Policy: Evidence from 4G LTE Industry ”.2017Hawaii International Conference on System Sciences, Hawaii, USA..

27.Rung-Tai Wu, Cheng-Hsin Chiang, Ying-Yin Zhang（2016）“Marriage Properly Matched: Selecting M&A Target Beyond Local Network Structure”.2016International Association for Chinese Management Research Conference,Hangzhou,Zhejiang

28.Lin Jian-Bang, Chen-Guo Wei（2016）“Enterprises Performance Prediction Model Based on Improved Fruit Fly Optimization Algorithm” IEEE 8th Joint International Information Technology and Artificial Intelligence Conference (ITAIC 2019) Chongqing, China

29.魏久峰，陈子健（2019），“快闪店新产品接受度之关键因素研究：以

感知价值与感知风险为中介变量 What drives the acceptance of new products in pop-up shop: Perceived value and perceived risk as mediators”，2019行销研究学术研讨会，中国文化大学，台北。

30.魏久峰，李雨琪、陈子健（2019），“男性刻板印象对女大学生计算机维修人员的满意度研究 A study on the satisfaction of female college students with male stereotypes on computer maintenance workers”，2019行销研究学术研讨会，中国文化大学，台北。

31.魏久峰，司徒钧君（2019），“影响大学生赴台湾留学学习满意度的关键因素研究 What drives the China university students’ learning satisfaction in Taiwan?”，2019行销研究学术研讨会，中国文化大学，台北。

32.魏久峰，吴宏峰，司徒钧君（2019），“大学生对于音乐流媒体的使用意愿研究调查：以‘网易云音乐APP’为例 What drives university students’ use intention of music streaming media：Netease cloud music app as an example”，2019行销研究学术研讨会，中国文化大学，台北。

33.魏久峰，叶侣君（2019），“UGC 旅游攻略对航空公司促销产品购买意愿之研究 The effect of UGC tourism strategy on purchase intention of airlines’ promotional products”，2019行销研究学术研讨会，中国文化大学，台北。

34.魏久峰，钟韵慧，叶侣君（2019），“女大学生手游沉浸度与分享意愿的关联性研究：以男性刻板印象为干扰变数 The relationship between immersion and share intention of female university students’ mobile game: Male stereotype as moderator”，2019行销研究学术研讨会，中国文化大学，台北。

35.魏久峰，唐楚业（2019），“动漫角色认同与看片意愿之关联性研究：以火影忍者为例 Research on the relationship between role identity and watching intention of animation programs：Naruto as an example”，2019行销研究学术研讨会，中国文化大学，台北。

36.魏久峰，邱南灏（2019），“大学生对流行音乐情感认知与购买意愿的研究：以情感迁移为调节变数 Research on university student’s emotional cognition and purchase intention of pop music: Emotional transfer as a

moderating variable”，2019行销研究学术研讨会，中国文化大学，台北。

37.魏久峰，潘铭婷（2019），“彩妆品冲动性购买意愿之关键因素研究：以网红认同感为中介 What drives the impulsive purchase intention of Cosmetics: The web celebrity identity as the mediator”，2019行销研究学术研讨会，中国文化大学，台北。

38.魏久峰,何爱弟,黄海英（2018），“大众算命意愿的关键因素之研究：以前景理论和理性行为理论为框架Investigating the Drivers of Fortune-telling Intention: the Framework of the Prospect Theory and The Rational Behavior Theory”，2018行销研究学术研讨会，中国文化大学，台北。

39.魏久峰,林华月,罗春花（2018），“色彩喜好因子对口红冲动性购买行为之影响 Toward Colorful Livelihoods: Investigating the Drivers of Impulsive Purchase Behavior for Lipstick”，2018行销研究学术研讨会，中国文化大学，台北。

40.魏久峰,唐秋怡（2018），“影响时间管理使用意愿的关键因素探讨 Investigating the Drivers of Use Intention for Time Management Products”，2018行销研究学术研讨会，中国文化大学，台北。

41.魏久峰,罗澜（2018），“消费者网购满意度因素探讨：以双十一为例 Investigating the Drivers of Customer Satisfaction for Double 11 Online Shopping”，2018行销研究学术研讨会，中国文化大学，台北。

2016 台灣感性研討會感性與創意實踐

2016 Conference on Kansei Engineering Sensibility and the Practice of Creativity

發表證明

曾麗玉　袁妙琼　林泓蓉　何倩婷　龐惠明

have presented the paper

運用城市公共文化空間及慢生活視角，
探析廣州方所書店體驗行銷對顧客滿意度之影響

Certifycate Of Paper Presentation

2016 台灣感性研討會感性與創意實踐 發表證明

科技部　EIDM　師範學院

陳俊智
臺灣感性學會理事長

章勝俊
師範學院院長

中華民國一〇五年十一月十八日

2019 行銷研究學術研討會
Conference on Marketing Research

研討會出席證明

主辦單位：中國文化大學行銷研究所

茲證明

作者：曾麗玉、張嘉嘉

篇名：基於社會認知理論探討用戶對英語付費課程打卡行為的影響研究

出席發表於 2019 行銷研究學術研討會。

駱少康

2019 行銷研究學術研討會 大會主席
中國文化大學 行銷研究所 所長
108 年 05 月 24 日

2019 行銷研究學術研討會
Conference on Marketing Research

研討會出席證明

主辦單位：中國文化大學行銷研究所

茲證明

作者：曾麗玉、朱穎琳

篇名：基於 UGC 模式下探討影響消費者對旅遊 APP 的轉換意願的研究—以 Z 世代消費者為例

出席發表於 2019 行銷研究學術研討會。

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主辦單位：中國文化大學行銷研究所

茲證明

作者：曾麗玉、賴紓言

篇名：探討體驗幸福感對消費者體驗分享意願的研究

出席發表於 2019 行銷研究學術研討會。

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HIGHER EDUCATION FORUM
www.prohef.org

Certificate of Presentation

International Conference on Social Science and Management
May 10-12, 2016, Osaka, Japan

Li-Yu Tseng, Qi-Tao Lao
Nanfang College of Sun Yat-Sen University

Has attended the conference and presented a paper entitled

Exploratory Research of the Career Plateau from the Middle and Lower Level Managers in a Retail Company

Chief Executive Committee

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Chief Executive Committee

SOOCHOW UNIVERSITY
UNTO A FULL GROWN MAN

論 文 發 表 證 明

魏久峰/陳泳廷 君所著論文「探究電商網紅直播新商機的影響因素」經審查通過，於東吳大學企業管理學系主辦之「2018 第 20 屆科際整合管理研討會」公開發表，特此證明。

大會主席 劉美纓
東吳大學企業管理學系主任

中 華 民 國 1 0 7 年 0 6 月 0 9 日

2018 行銷研究學術研討會
Conference on Marketing Research

接 受 函

主辦單位：中國文化大學行銷研究所

在此代表「2018 行銷研究學術研討會（CMR2018）」主辦單位，恭喜　　鈞座投稿之論文：

作者：**魏久峰 羅潤**

篇名：**消費者網購滿意度因素探討－以雙十一為例**

Investigating the Drivers of Customer Satisfaction for Double 11 Online Shopping

經兩位匿名評審委員審查後，您的文章已被接受。

敬祝

研安

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作者：**魏久峰 唐秋怡**

篇名：**影響時間管理使用意願的關鍵因素探討**

Investigating the Drivers of Use Intention for Time Management Products

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作者：**魏久峰 林華月 羅春花**

篇名：**色彩喜好因數對口紅衝動性購買行為之影響**

Toward Colorful Livelihoods: Investigating the Drivers of Impulsive Purchase Behavior for Lipstick

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作者：**魏久峰 何愛弟 黃海英**

篇名：**大眾算命意願的關鍵因素之研究：以前景理論和理性行為理論為框架**

Investigating the Drivers of Fortune-telling Intention:the Framework of the Prospect Theory and The Rational Behavior Theory

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作者：**魏久峰　吳宏峰　司徒鈞君**

篇名：**大學生對於音樂流媒體的使用意願研究調查：以“網易雲音樂 APP”為例**
What drives University Students' Use Intention of Music Streaming Media：Netease Cloud Music App as an Example

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Conference on Marketing Research

研討會出席證明

主辦單位：中國文化大學行銷研究所

茲證明

作者：魏久峰、吳宏峰、司徒鈞君

篇名：大學生對於音樂流媒體的使用意願研究調查：以“網易雲音樂 APP”為例

出席發表於 2019 行銷研究學術研討會。

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作者：**魏久峰　司徒鈞君**

篇名：**影响大学生赴台湾留学学习满意度的关键因素研究**
Research on the Key Factors Affecting University Students' Satisfaction in Studying in Taiwan

經兩位匿名評審委員審查後，您的文章已被接受。

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茲證明

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篇名：影响大学生赴台湾留学学习满意度的关键因素研究

出席發表於 2019 行銷研究學術研討會。

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作者：魏久峰 李雨琪 陳子健

篇名：男性刻板印象對女大學生電腦維修人員的滿意度研究
A study on the satisfaction of female college students with male stereotypes on computer maintenance workers.

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作者：魏久峰、李雨琪、陳子健

篇名：男性刻板印象對女大學生電腦維修人員的滿意度研究

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駱少康

2019 行銷研究學術研討會 大會主席
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作者：魏久峰、陳子建

篇名：快閃店新產品接受度之關鍵因素研究：以感知價值与感知風險為中介變量

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A two-stage intelligent model for personal credit loans default prediction by using SOM and PHM

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ABSTRACT: In the era of big data, it is very important for companies to mining the value of vast data in the data warehouse. This study provides a two-stage intelligent predicted model adds the concept of customer relationship management (i.e. customer segmentation). As a result, this study applied SOM to solve the urgent issue and find 3 groups of borrowers, then we predict the lifetime of borrowers by using PHM. The results show that the borrowers can be segmented effectively into different group by SOM and the performance of integrated model is the best.

1 INTRODUCTION

In the era of big data, it is very important for companies to mining the value of vast data in the data warehouse. Many companies have begun to use intelligent procedures finding the hidden information from consumer behaviors along with the rapid development of computer technology. The bank is one of the industries has big data, such as the application data of personal credit loans.

In the past, people in approval department often used their experience to judge whether to accept the applications. However, it not only wastes operation time but easily has biased due to manipulation. The banks will suffer huge losses if they loan to the people who is the potential default. Hence, to provide an intelligent procedure to predict default plays a crucial role in banks.

Single-stage default predicted models such as logistic regressions, discrimination analysis, decision tree, or different kinds of survival models are usually used in the large volume of previous studies. However, the lending behaviors are usually exposed to the different backgrounds of the customers. Thus, this study has a new idea and adds the concept of customer relationship management (i.e. customer segmentation) into intelligent technology to predict the default. This study aimed to build a two-stage default predicted model by using self-organizing mapping (SOM) to segment first, and by proportional hazard model (PHM) to predict the lifetime (default time). It will help banks identify different borrowers and make the rational decisions from big data.

The remainder of this study is organized as follows. In Section 2, the literature on SOM and PHM are briefly reviewed. In Section 3, the research design is proposed and explained. In Section 4, an empirical study is conducted to prove that the proposed model is workable. Finally, Section 5 contains the conclusions of this study.

2 LITERATURE REVIEW

SOM was provided by Kohonen in 1981 and widely applied in various fields. For example, it was used to find out the relationship between users and agents in telecommunications (Chien, 2006); to segment travelers (li et al., 2010); to analyze students' evaluations of teaching (Forradellas et al., 2012); to know purchase intention in e-commerce (Hong & Kim, 2012); to improve the stock trading system (Pham et al., 2014), and in the transportation field (Yang et al., 2014) etc. However, it seems to rarely be applied in segmenting the borrowers of personal credit loans. So, this study attempted to segment the borrowers by SOM base on the past studies. It could achieve good performance in personal credit loans as well.

In addition, this study aims to estimate the lifetime besides predicting whether default or not. As reviewing, the major advantage of PHM among all predicted models is that it can accurately predict the lifetime and be excellent generalization performance in a wide range of problems. PHM first developed by Cox in 1972 and then widely used in prediction of event occurrence, such as the lifetime of online contents (Lee, 2012), expected time of credit recovery (Ha, 2012), and the stability of parameter estimates (Leow & Crook, 2014) etc. Thus, after segmenting the borrowers of personal credit loans, this study applies the PHM to predict the lifetime of different group of borrowers.

3 RESEARCH DESIGN AND METHOD

3.1 *Research design*

In order to solve the problem of complicated information in personal credit loans, this study

combines big data analysis intelligence with CRM concepts. The figure 1. is the description of every step.

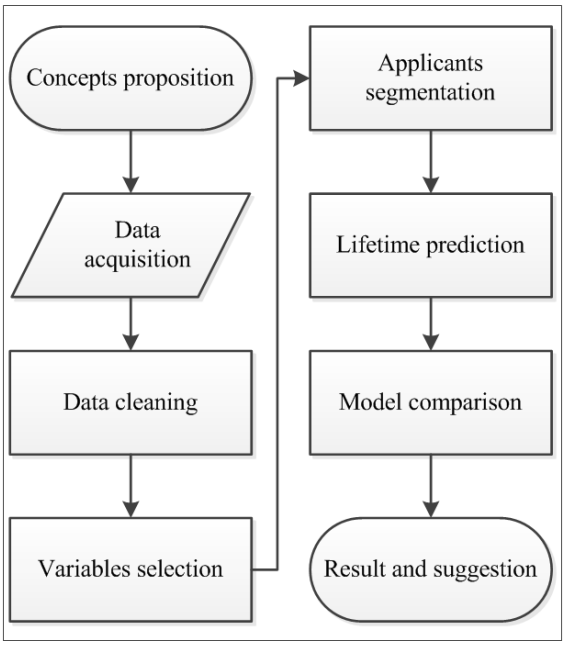

Figure 1. Research process chart

As Figure 1. Shows, this study acquired data after communicating the proposed concept with the bank. Then, we understood the distribution of data and clean the data to confirm the completeness and correction. Furthermore, this study selects the important factors by association analysis (i.e. Chi-square test, Cramer's V, t-test, Eta^2, correlation analysis) to select the important factors to default, and clusters the borrowers by SOM. PHM is applied to predict the lifetime of each segment samples and the whole samples, and finally comparing different result of models.

3.2 *Data and variables selection*

The data of personal consumer loans used in this study is from a bank in Taiwan, and initially there are 15,725 borrowers with 97 variables. The dependent variable (DV) in this study is repayment status including 3,233 default samples and 12,492 non-default ones. All of variables are divided into 3 groups: loan information, payment status, demographic information. According to Chang et al. (2007) suggestion, this study just adopts the group of "demographic information" and finds the important factors as inputs to SOM.

Before clustering and prediction, we select important factors to be used in SOM and PHM. This study uses two-steps to select important factors (Cramer's V > 0.1 or Eta^2 > 0.01) at first, and then drops one of the variables if the correlation test of Cramer's V > 0.5 and Eta^2 > 0.14 at the second step to prevent collinearity (Cohen, 1988) (see Table 1).

category	Variable	p	Cramer's V /Eta2	SOM	PHM
Personal information	Cross-selling	0.000	0.083		✓
	Education	0.002	0.022		✓
	Gender	0.000	0.116	✓	
	Marital status	0.005	0.018		✓
	Industry	0.000	0.125	✓	
	Income*	0.000	0.004		✓
payment status	Total payment_amt*	0.000	0.017		✓
	Total interest_amt*	0.000	0.011		✓
Loan information	payment_amt*	0.000	0.006		✓
	Loan type	0.006	0.015		✓
	Approval level	0.010	0.016		✓

Table 1 the list of input variables

* continuous variables

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3.3 *Research methods*

3.3.1 *Self-organizing map (SOM)*

SOM is an unsupervised competitive neural network learning model proposed by Kohonen in 1981. It applies mapping technique to project multi-dimensional inputs to a two-dimensional space (see Figure 2.), and neighboring neurons will have similar response to one variable. The introduction of algorithm is as following:

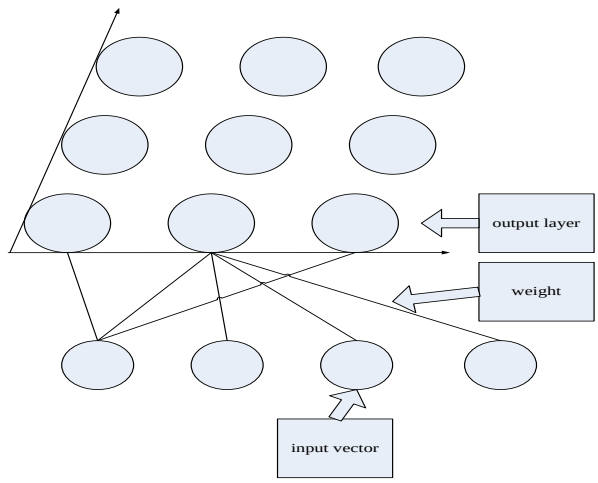

Figure 2 Structure of SOM

- At first, the weight $w_j(0)$ is assigned randomly.
- Selecting vector x to train from samples. Finding out the winner neuron. Using minimum distance to decide winner neuron $i(\mathbf{x})$ in n times according to equation (1).

$$i(\mathbf{x}) = \arg\min_j \|\mathbf{x}(n) - \mathbf{w}_j\|, \quad j = 1,2,\dots,l \qquad (1)$$

- Taking winner neuron as the center and adjusting the weight follow to equation (2).

$$\mathbf{w}_j(n+1) = \mathbf{w}_j + \eta(n) h_{j,i(\mathbf{x})}(n)\left(\mathbf{x}(n) - \mathbf{w}_j(n)\right) \qquad (2)$$

– $\eta(n)$ is learning rate, $h_{j,i(\mathbf{x})}(n)$ denotes the neighborhood function of winner neuron $i(\mathbf{x})$, $\eta(n)$ and $h_{j,i(\mathbf{x})}(n)$ will change continually.

Repeating steps when it does not change in the output layer (Kohonen, 1981; Haykin, 2008).

3.3.2 *Proportional hazard model (PHM)*

This study uses PHM to predict the lifetime. In particular, it is chosen because it is useful to predict the event occurred time with an appropriate baseline and time-dependent parametric. It can provide different survival probabilities in discrete time. It is a particular problem in statistical analysis, and it can be solved in this study. The brief introduction is as following equation (3)-(7) (Ha & Krishinan, 2012):

The probability density function *f(t)* means that someone can survive at time t but happen to die during △t.

$$f(t) = \lim_{\Delta t \to 0} \frac{\Pr(t \le T < T + \Delta t)}{\Delta t} \tag{3}$$

Accumulative density function *F(t)* for the time t means that someone has died before or at time Δt.

$$F(t) = \Pr(T \le t) = \int_0^t f(u) \tag{4}$$

$$S(t) = \Pr(T \le t) = 1 - F(t);\ f(t) = -\frac{dS(t)}{dt} \tag{5}$$

h(t) means hazard function in Equation (6), and the hazard rate and hazard function can be interpreted as “default rate” and “default function”.

$$h(t) = \frac{1}{\Pr(T \ge t)} = \lim_{\Delta t \to 0} \frac{\Pr(t \le T < t + \Delta t)}{\Delta t} = \frac{f(t)}{S(t)} \tag{6}$$

$$S(t) = \exp[-\int_0^t h(u)du] = \exp[-H(t)] \tag{7}$$

Where *H(t)* is the cumulative hazard function.

4 RESULT

4.1 *Borrowers segmentation*

The result of SOM is shown in Figure 3. and this study decided to integrate neighboring group and find 3 groups finally. Neurons named x=2, y=2 ; x=2, y=1; x=2, y=0 are combined into one group, and neurons named x=0, y=0; x=0 y=1 are combined into another group. According to the default rates, the group x=0, y=2 is the highest (31.19%) that means this group are most likely to default, and this study named it high risk group (HR). Similarly, the group of x=2, y=2 ; x=2, y=1; x=2, y=0 is named medium risk (17.29%) group (MR), and the group of x=0, y=0; x=0 y=1 is named low risk (9.96%) group (LR).

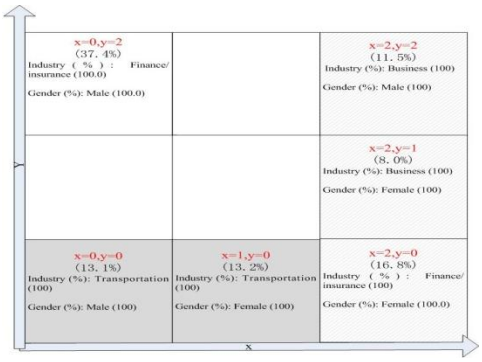

Figure 3. Output layer of SOM

4.2 *Lifetime prediction model*

There are two kinds of models are included in this research: the segment model and the whole model. The lifetime is decided by comparing probabilities with cut-off points in different time. If the probabilities are less than cut-off points, the borrowers are considered that he (or she) has the intense to default.

Taking HR group for example, Table 2 presents the results of 10 prediction cases. the case 2, 3, 4 are predicted to default in their seventh month, case 1 is predicted to default in sixth month, and case 7 is predicted to default in forth month. Moreover, if the probabilities are all higher than cut-point within the period under observation (16 months), these cases are predicted to keep non-default status within their 16 months.

Table 1 Survival rates of prepayment for HR

Cut-off point		0.984	0.883	0.736	0.536	0.376
NO	Actual time	t=4	t=5	t=6	t=7	t=8
1	6	0.987	0.887	0.715	0.488	0.290
2	10	0.989	0.899	0.742	0.528	0.332
3	7	0.989	0.898	0.741	0.526	0.331
4	13	0.989	0.898	0.741	0.527	0.331
5	0	0.998	0.977	0.937	0.871	0.788
6	0	0.990	0.912	0.772	0.575	0.385
7	7	0.984	0.862	0.661	0.413	0.218
8	0	0.997	0.969	0.917	0.830	0.725
9	0	0.997	0.972	0.923	0.842	0.744
10	9	0.996	0.960	0.893	0.785	0.658

4.3 *Model performance*

In order to confirm the stability of predicted models, this study applies 10-fold cross validation to build the PHM in both segment model and the whole model. This study divided the samples into 10 mutual exclusion groups, and selected one group as test data to validate the model in each time. Remains are train data to construct default predicted model.

In this study, we adopt the revised concept of confusion matrix (Berry & Linoff, 2004) to calculate the models’ accuracy rate (AR). As Table 3 shows, the gray area is successfully predicted. It represent

Table 3 Confusion matrix of lifetime prediction

Predicted (month)		Non*	3	4	5	6	7	8	9	10	11	12	13	14	15	total
Actual Lifetime (month)	Non*	9456	5	41	127	122	364	288	305	188	184	159	101	61	51	11452
	S(4)	5	0	1	1	1	6	1	0	2	1	0	1	0	0	19
	S(5)	23	2	5	7	9	11	3	8	4	5	6	1	0	2	86
	S(6)	74	2	9	13	13	25	13	17	9	7	4	7	4	0	197
	S(7)	150	4	14	22	16	24	12	19	14	3	8	5	1	2	294
	S(8)	269	3	11	14	11	29	12	16	5	5	4	7	0	0	386
	S(9)	271	1	5	8	9	12	16	9	7	7	6	8	4	0	363
	S(10)	345	2	0	6	5	10	7	11	6	2	6	1	1	1	403
	S(11)	206	0	0	0	1	6	4	9	7	4	2	1	6	1	247
	S(12)	209	0	0	0	0	1	3	6	6	4	1	0	1	0	231
	S(13)	184	0	0	0	0	2	5	2	1	3	1	1	0	0	199
	S(14)	121	0	0	0	1	1	0	0	1	2	1	2	0	0	129
	S(15)	83	0	0	0	0	0	0	0	0	1	0	0	0	0	84
	S(16)	56	0	0	0	0	0	0	0	0	0	1	0	0	0	57
	S(17)	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	Total	11457	19	86	198	188	491	364	402	250	228	199	135	78	57	14152

* non-default

the predict lifetimes are earlier than actual lifetime. Accordingly, the AR of one of the whole models is 69.62% (=9852/14152×100%)

This study provides the best integrate model to prove prediction of the lifetimes of borrowers, as a result, this study decide to select the best AR of each group. From the Table 4, we find that both train data and test data's average ARs in segment models (68.72%, 68.69%) are above whole models (67.70%, 67.71%). Thus, comparing with the whole model, to segment borrowers can provide more efficient prediction and obtain more information.

Then we select HR and MR in the whole model, when both AR of HR and MR (61.62%, 62.04% and 72.54%, 73.14%) are respectively higher than the segment model (56.35%, 56.51% and 71.82%, 71.74%). LR from segment model is selected, because the AR (82.02%, 81.78%) are higher than the whole model (69.67%, 69.34%). Therefore, HR and MR in the whole model are combined with LR of segment model, to design an integrated model with higher AR (70.95%, 71.26%) than other groups.

Table 2 AR of different groups unit: %

			1	2	3	4	5	6	7	8	9	10	Average
Whole model	total	Train	68.25	67.50	66.82	67.16	68.10	66.75	65.93	68.02	68.91	69.62	67.70
		Test	70.95	70.48	69.04	69.68	70.06	67.71	66.56	68.05	64.35	60.27	67.71
	HR	Train	62.32	61.39	60.73	61.66	62.28	61.38	59.13	60.36	63.62	63.34	61.62
		Test	63.44	63.95	69.05	65.99	62.59	61.39	69.90	63.10	49.15	51.87	62.04
	MR	Train	72.89	72.16	71.59	71.73	72.90	70.85	71.18	74.78	72.90	74.45	72.54
		Test	74.30	75.26	71.45	75.31	72.85	75.83	67.08	83.30	75.44	60.60	73.14
	LR	Train	70.28	69.74	68.88	68.66	69.71	68.74	68.34	69.60	70.90	71.86	69.67
		Test	77.00	71.26	65.70	72.71	76.81	65.46	61.11	54.11	77.48	71.74	69.34
Segment model	total	Train	68.78	68.64	67.16	68.41	69.33	68.05	67.35	68.80	69.73	70.92	68.72
		Test	71.58	71.44	73.05	68.34	69.42	68.91	70.31	70.53	63.27	60.01	68.69
	HR	Train	56.95	56.31	53.87	56.17	56.88	55.95	54.18	56.92	58.13	58.13	56.35
		Test	59.52	58.84	62.76	52.55	57.31	51.87	64.97	61.22	46.60	49.49	56.51
	MR	Train	71.68	71.35	70.87	71.32	72.12	70.79	70.79	71.64	72.71	74.88	71.82
		Test	74.48	75.26	75.13	74.96	72.50	76.71	68.30	75.92	65.61	58.49	71.74
	LR	Train	81.58	82.41	80.93	81.79	83.16	81.44	81.34	81.77	82.09	83.65	82.02
		Test	84.75	84.06	84.78	81.64	82.37	82.37	80.68	76.33	83.78	77.05	81.78
Integrated model		Train	71.23	70.83	69.99	70.61	71.63	70.10	69.35	71.22	71.85	72.72	70.95
		Test	72.98	73.35	74.06	73.49	71.52	72.16	71.71	73.90	67.79	61.67	71.26

5 CONCLUSION

More and more companies realize mining useful information from a large number of data is not easy in the era of big data. They have begun to use intelligent technology and try to find the hidden information from consumer behaviors. This study provides a two-stage intelligent predicted model and adds the concept of borrower segmentation into default predicted model. In order to improve the process of approval departments and ensure the smooth operation of the bank, banks must effectively prevent the occurrence of default. Recognizing bad and good borrowers is essential part to improve the process, from the standpoint of customer relationship management (CRM), predicting lifetime of borrowers is also important to ensure the steadily operate in banks. As a result, this study applied SOM to solve the urgent issue and find 3 groups of borrowers, then we predict the lifetime of borrowers by using PHM.

We divide borrowers into 3 groups according their personal information. The result shows that different groups have significant characteristics. Highest risk group and higher risk group income average are much higher than other groups and most of them work in finance or insurance industry. It means that people with high income may default easily in this study. It is different from common sense that negative correlation between income and default. However, the possible reason is that the loan purpose of the borrowers in this group is investment. On the one hand, borrowers get the loan easily due to their high income; on the other hand, they judge themselves better than others in regard to investment skills or personality attributes according to overconfidence theory (Baker & Nofsinger, 2010).

They often ignore or underestimate some objective information contrary to their knowledge and tend to take enormous risk in investment just depend on their subjective information. It may cause to fail easily in investment and then default.

This research applies PHM to predict lifetimes of two kinds of data. The results show to segment borrowers by SOM can improve the prediction of lifetimes.

We find that the whole models' ARs of HR and MR in are higher than the segment models'. This study also find that AR of LR in the segment model is higher than AR of LR in overall sample model. As a result, HR and MR in the whole models are combined with LR in the segment model. The AR of integrated model is significantly higher than AR of the whole model.

This study suggest that banks can use integrated models to predict the lifetime of borrowers and design appropriate projects to different groups, it can help banks develop their personal credit loan efficiently. In further study, we will continuously seek more significant factor to model better prediction framework.

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ICSSAM
International Conference on Social Science and Management

International Conference on Social Science and Management (ICSSAM 2016)

May 10-12, 2016, Osaka, Japan

Acceptance & Invitation Letter

Paper ID: **ICSSAM-1944**

Paper Title: **Animated spokes-characters and brand match-up on affecting the operation model of Chinese animation**

Mode of Presentation: **Oral**

Dear **Min-Jing Mai**,

Thanks for your paper submission. On conclusion of the blindly review process, we are pleased to inform you that your paper is accepted at The 4th International Conference on Social Science and Management (ICSSAM 2016) in Osaka, Japan during May 10-12, 2016

ICSSAM 2016's policy and procedures require at least one author to register for and attend the meeting to present the paper after it is accepted. **The registration deadline is March 05**, 2016. If we do not receive your registration with payment by this date, your paper will be withdrawn from the conference program and proceedings. If you have any further questions, please do not hesitate to contact the secretariat of ICSSAM by sending your email icssam@icssam.org and indicate your ICSSAM ID which is listed above.

On behalf of the 2016 ICSSAM Program Committee, We invite you to immediately mark this event on your calendar and make your plans to attend this conference during May 10-12 in Osaka, Japan.

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Management (7)

Thursday, May 12, 2016 10:30-12:00 Room 1005

Session Chair: Prof. Wei-Feng Tung

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Kitiyawadee Tirathamcharoen | King Mongkut's University of Technology
Thonburi Wisitsree Wiyaratn | King Mongkut's University of Technology Thonburi
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Animated spokes-characters and brand match-up on affecting the operation mode of Chinese animation

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Abstract

Purpose–Cultural creativity industries are one of the most promising industries in 21Century, and its economic benefits go up to $22 billion per day throughout the world. And the animation industry plays an important part of the cultural creativity industries, which with the significant characteristic of the long life cycle, low energy consumption, and high value-added. The United States, Japan, South Korea have successfully established their own animation mode of operation. However, China still remains on the elementary stage of exploring. Therefore, in this paper, we synthesize the mature experience of the mentioned countries and Taiwan area (the Animated spokes-character of 7-ELEVEN) on animation model of operation to explore a suitable way to advance China's animation industry. Additionally, we will also discuss how the match-up between Animated spokes-characters and brand image and how the attractiveness of Animated spokes-characters affect consumer's purchase intention and brand loyalty.

Design/methodology/approach–This study establishes structure model in the base of match-up hypothesis, to discuss how the match-up between Animated spokes-characters and brand image influences consumer's behavioral intention and innovate the new animation operation mode which is contained "store brand-Animated spokes-characters- cartoon / movie- derivatives- theme park". Data were collected from Chinese consumer by questionnaire and discussed Chinese consumer's behavioral intention for the new animation operation mode.

Results–In this research we find five findings: 1.Advertising attitude and Brand association positively effects on behavior intention. 2.The match-up between Animated spokes-characters and brand image(consistence) facilitate raise consumer's attitudes toward advertising. 3.The attractiveness of Animated spokes-characters (source attractiveness) is highly effective in the brand association. 4.Consistence positively effects on behavioral intention via advertising attitude. 5.Source attractiveness has a significant positive effect on behavioral intention via brand

association.

Implications/Value–The findings from this study indicate that the match-up between Animated spokes-characters and brand image influences firm's brand extension positively. It is particularly important for China to create New type of animation mode and extend store brand by using the Animated spokes-characters. This paper can help to understand consumer's behavioral intention in store brand of Animated spokes-characters, and provide implications to innovate new animation operation mode.

Keywords–store brand of animated spokes-characters; match-up hypothesis; innovative animation mode of operation; behavioral intention; source attractiveness.

Introduction

John Hawkins (2001) firstly proposed the concept of "creative industries" in <The creative economy>. Nowadays, Scholars in academia and industry argue that cultural creative industries not only directly present the essence of economic benefits but also for the development of cultural activities(Fang & Ping, 2014). In the twenty-first century, the cultural creative industry is considered to be one of the most promising industries, and its economic benefits go up to $22 billion per day throughout the world. Additionally, the animation industry plays an important part of the cultural creativity industries, which with the significant characteristic of the long life cycle, low energy consumption, and high value-added.

The United States, Japan, South Korea have successfully established their own animation mode of operation. At the start of sixties century, The United States has implemented animation mode of operation and developed cultural and creative industries ,which involved in Multimedia, Real estate development, Visual art, and Tourism. For the Next, Japan developed the animation operation mode in the basic of cartoon creation and combined with cartoon TV/movies, and derivatives. In the 1980s, getting rid of the restriction of Japan and the United States, South Korea have succeeded in developing new mode, which contained games, cartoon films and derivatives (Pan, 2010). However, China still remains on the elementary stage of exploring ,which is still in the embryonic stage, lack of market research link and without connecting with animation character design and subsequent derivatives (Wang, 2007). In the meantime, 7-ELEVEn in Taiwan launched its store brand animation spokes-character "Open-Chan" on July11th, 2005, associated with the development of film, animation, concert, derivatives, theme parks, and other derivatives industry. Since launched the animation spokes-character, 7-ELEVEn have earned net profit more than NT $500 million each year (Wu, 2008). Furthermore, this animation operation mode combines with store brands and cartoon characters, it is good to make up for the defects of the traditional operation mode. Therefore, this study synthesize the mature experience of the mentioned countries and Taiwan area (the Animated spokes-character of 7-ELEVEN) on animation model of operation to explore a suitable way to advance China's animation industry.

Although celebrity endorser can strengthen the link between consumer and brand in their own characteristics when shaping a good image, they also have a cumulative

damaging effect, which relations can turn sour and perceptions can change (Fufeng Xiao, 2005). Similarly, the commodity characteristics on authorized animation spokes-characters may be easy to fuzzy its enterprise endorsement. Instead, store brand animation spokes-characters can reduce the distance between enterprises and consumers, and encourage consumers to expand their liking from spokes-character to brand and its products(Huang & Hsieh,2011). During previous studies, scholars researched that spokes-characters with the pleasant image will enhance consumer brand attitude, and contributed positively attitude toward advertising(Chen, Chang, Besherat A, & Baack, 2013) and purchase intention. Whereas these previous studies are limited to investigate the celebrity effect on advertising attitude and purchase intention, they focus solely on the animation spokes-characters who effect on advertising, brand association and behavior intention(Choi & JG, 2012). Heiser researched animated spokes-characters and human spokespersons and indicated that advertising efficacy of animated spokes-characters exceeded that of human spokespersons (Heiser Sierra, & Torres, 2008).Therefore, It is a worth issue to investigate the designing of animation spokes-character who can embody company's spirit.

Therefore, The objectives of this study, are 1. to investigate the effect of advertising attitude and brand association on consumer behavior intention and 2. to test match-up hypothesis theory and source attractiveness in advertising attitude and brand association. The article is organized as follows. Firstly, we present an overview of literature regarding behavior intention, advertising attitude, brand association, consistency, and attractiveness. Secondly, we focus on our hypothesis and analyze data which was collected from Chinese consumer by questionnaire. Finally, we discussed Chinese consumer's behavioral intention for the new animation operation mode, which is contained "store brand- animated spokes-characters- cartoon/movie-derivatives- theme park".

Literature review and Hypotheses development

- ***Advertising attitude and Behavior intention***

Behavior intention refers to the tendency consumers take specific actions to product and business, or the possibility of taking some subjective behavior(Folkes, 1988). Behavior intention can be divided into five dimensions, willingness to pay, loyalty, internal responses, external responses and transfer (Parasuraman , Leonard L .Berry, & Valarie A. Zeithaml, 1991). Behavior intention is not only a reliable measurement to predict the behavior of the individual variables but also an important index for predicting consumer behavior(Hellier, Geursen, Carr, & Richard 2003), and is the judgment or opinion about buying a particular product again from the same enterprise under the premise of the current and possible condition of an individual. Although most scholars have examined the impact of celebrity endorsement on "purchase intention", in the case of store brand animation spokes-characters, the impact on consumers is not limited to purchase intention, but brand loyalty. Therefore, This study will investigate consumer's advertising attitude and brand association, in two aspects from behavior intention about "purchase intention" and "brand loyalty"(Shiau, 2014).

Advertising attitude is commonly used to assess the effect of marketing, which refers to consumer's preferences for goods or services, and is the trend in response to advertising after the stimulus(Yingjie Wang, 2009). Advertising attitude will directly effect on purchase intention and brand attitude(Suh & Yi, 2006). And advertising content value will positively affect consumers' attitude toward advertising and then influence the purchasing behavior(Wen, 2012). Scholar also proved that people who are good-looking, attractive and appealing are particularly used as endorsers by advertising can provoke emotional and attitudinal reactions, after comparative study on nostalgia advertisement and nonnostalgia advertisement (Bambauer-Sachse & Gierl, 2009). Thus, it is essential to know how advertising effects on purchase intention. The measurement methods of loyalty, divided into the direct and indirect measurement. Most of scholars measured loyalty from direct ways, ignored the indirect measurement method(Yoo, Donthu, & Lee, 2000).However, the influence of advertising on brand loyalty is not directly, but via their impact on consumer perception of quality of products and brands, finally shaping the brand loyalty. Previous scholars believed that advertising does not directly affect on brand loyalty, but plays an important role in maintaining brand loyalty. Advertising will directly affect brand loyalty, from a marketing communication point of view (Agrawal, 1996; Moorthy & Hawkins, 2005). Therefore, on the basis of the previous discussion, we posit the following hypothesis that :

Hypothesis 1: Advertising attitude positively effects on Behavioral intention.

Hypothesis 1-a: Advertising attitude positively effects on behavior intention of purchase intention.

Hypothesis 1-b: Advertising attitude positively effects on behavior intention of brand loyalty.

- ***Brand association and Behavior intention***

Brand association is an important part of brand equity and refers to consumer different reaction to brand marketing activities on the basis of their brand knowledge(Chundong Zheng & meng Zou, 2014). In customer's memory, the brand association can help them to process and obtain information, create a positive attitude to make option, and benefit to implement differentiation position and extent brand strategy. Recently, scholars focus their attention on the influence of celebrity endorser on advertising attitude, brand attitude and purchase intention and explore the effect more on brand image, but less on the brand association(Kleijnen M, Ruyter, & W.Andreassen, 2005). But Store brand animation spokes-characters is designed from enterprise's store brand, brand recognition, philosophy, who mainly influence consumer's brand association, and appeal them to buy the product or service, finally positively effects on brand image and loyalty. Obviously, brand image is shaped by propaganda activities, marketing activities, and consumer's own characteristics. The basis of the image is a brand association, which consists of perceptual nodes linked to the brand node in memory. Thus, Brand association is important elements which determine store brand and subsequent derivatives developing. In consumer's memory, brand image is the subjective awareness reflected from the brand association (Shiau,

2014), which is as the parts of the brand image and the result of the overall output of different products on brand and formation of a unique brand image. Therefore, consumer's brand image considerations indeed dominate their choice during a purchase. Thus, this study will refine brand image to explore the influence of brand association.

Brand association can consolidate consumer's purchase intention(Romaniuk & Nenycz-Thiel, 2013),when making a purchase decision, it will help consumers find a potential clue and meet their first needs of brand information. The combination of brand association is brand awareness, which plays a vital role in the process of purchase decision, will affect consumer's purchase decision, and their buying behavior(Kotler P & Keller, 2006). Thus, It is necessary to explore the influence of brand association on purchase intention. Brand association is also the foundation of consumer's purchase decision and brand loyalty, which is on behalf of the intrinsic value of the brand. In addition, high brand equity is unique than low brand equity ,The core of brand association is the key factor on brand assets, which may finally transform into intangible assets of enterprise(Chen, 2001). Scholars pointed out that the quality of consumer's perceived will affect satisfaction, and ultimately affect on brand loyalty. Therefore, we suggest the following hypothesis that:

Hypothesis 2: Brand association highly effective on behavior intention.

Hypothesis 2-a: Brand association positively effects on behavior intention of purchase intention.

Hypothesis 2-b: Brand association positively effects on behavior intention of brand loyalty.

The effectiveness of endorser generally can be classified into four major categories, the source credibility model, the meaning transfer model, the source attractiveness model and the match-up hypothesis model(Liu, Huang, & Jiang, 2007). This study will explore the effectiveness of animation spokes-character on the match-up hypothesis model and the source attractiveness model.

- ***Consistency and Advertising attitude***

Consistence being based on Social Psychology is mainly used to explain what consumer advertising attitude to and marketing expectations. evolved from Schema, which defined as the degree of the match-up between stimulating information and consumer Schema. In this study, the match-up between animation characters and brand refers the degree of consistency between the image of animation spokes-characters and consumer's perception of animation characters image (Lee , Kim, 2015).

When endorser is not consistent with brand image, the involvement degree is low, and consumers will not have motivation and ability to focus on the information, and poor attitude toward advertising, the level of involvement depends on consumer's motivation and ability to deal with information during watching advertising. When spokes-characters image consistent with the brand, consumers will have a positive attitude to products(Koerning & Page, 2002). Austad pointed out that consistency between the spokes-characters and products will affect the result of endorsement,

especially play a key role in advertising effect(Choi & Rifon, 2012). Scholar also researches the customer's group of 7-Eleven in Taiwan and showed that consumers perceived the consistency degree of animation spokes-characters and brand is high, the credibility of enterprise and animation characters are thought to be higher(jianhua, 2010).When the consistency of animation spokes-characters and brand increase, the association between the endorser and brand will increase, with higher match-up between animation spokes-characters and brand, the credibility of advertising product will increase more(Yoo, 2013) Therefore, this study proposes the following hypotheses that:

Hypothesis 3: Consistency has positively impacted on advertising attitude.

- ***Attractiveness and brand association***

Brand association divided into three dimension, attributes, benefits and attitudes. The creation, marketing, and promotion of store animation spokes-characters are closely related to company's products, brands, and organizations. Some aspect of elements will promote consumers to associate with different information of the company. However, Scholar were a lack of unified effective claims in the measured way of brand association for a long time. Someone think the measured way of brand association is the same as brand loyalty(Broyles, Schumann, & Leingpibul, 2009), another think it was deviation if brand association and loyalty were put in the same copies questionnaire measurement, and it is hard to confirm the effectiveness of them. Attractiveness theory comes from 'Source effectiveness model'(Ohanian R 1990), which can be divided into 'Source attractiveness' and 'Trustworthiness'. The previous study of spokes-characters focus on Source attractiveness, Trustworthiness, Expertise, product-celebrity match, Type of products and information and participation (Erdogan, 1999). Ohanian(1990)argued that Source effectiveness model depends on Source attractiveness, expertness, and trustworthiness to analyze the factors of the communicator and model contends. Attractive spokes-characters can enhance attitude towards advertising and brands, and is ambiguous on generating repeat purchase intention. Thus, attractiveness is considered to be an important factor in increasing the persuasiveness of marketing messages. Animation spokes-characters is one type of endorser during the creation of a brand asset and the unique identifier of corporate. Specifically, the persuasion of attractiveness happens when consumers are motivated to associate themselves with endorsers who are deemed to be appealing to them in terms of their preferences, beliefs, behaviors or attitudes. Thus, the physical attractiveness of endorsers can influence consumers to act and behave favorably toward the endorsed brand, affecting consumer's attitudes and behaviors, finally it can enhance and established brand equity. When attractive spokes-characters endorsed attractive products, consumer is able to establish an association with the attributes and characteristics of brand via the endorser, finally have positive attitude on product and pleasure experience, even transferred their positive feelings into endorsement of brand, such as the animation spokes-characters "Open-Chan" in Taiwan 7-ELEVEn(Huang, Hsieh, & Chen, 2011). However, there is little research about the influence of spokes-characters attraction on brand association. Therefore, this study attempts to explore the relationship , and puts forward the following assumptions:

Hypothesis 4: Attractiveness of animation spokes-characters have positively impacted on Brand association.

- ***Consistence, advertising attitude, and behavior intention***

During watching advertising, consumers more easily identify advertising content, and have high motivation and ability to absorb advertising information, then have a positive attitude toward advertising content because of the consistency between endorser and brand(Fiske & Taylor, 1991), though a positive attitude to advertising, consumer will evaluate potential purchase motivation and positive emotion(Koerning & Page, 2002). It has been proved that consumers will have more positive attitude to advertising when in the consistency between endorser and brand than without any consistency between endorser and brand. Also, consistency between endorser image with the brand in high degree will be a stronger influence purchase intention, corporate image, credibility, and loyalty(Kim, Lee, & Prideaux, 2014). Therefore, in order to examine this, the following hypotheses is proposed:

Hypothesis 5: The consistency between animated spokes-characters and brand is positively effective on behavior intention via advertising attitude.

- ***Attractiveness, brand association, and behavior intention***

Spokes-characters attractiveness does not directly affect on consumer's purchase behavior (Pornpitakpan, 2003), but influence consumer's advertising attention via external factors, such as movement appearance and voice ,which is a benefit to produce good purchase intention(Neeley& Schumann, 2004). Hence, the following hypothesis is presented as:

Hypothesis 6: The attractiveness of Animated spokes-characters is highly effective on behavior intention via brand association.

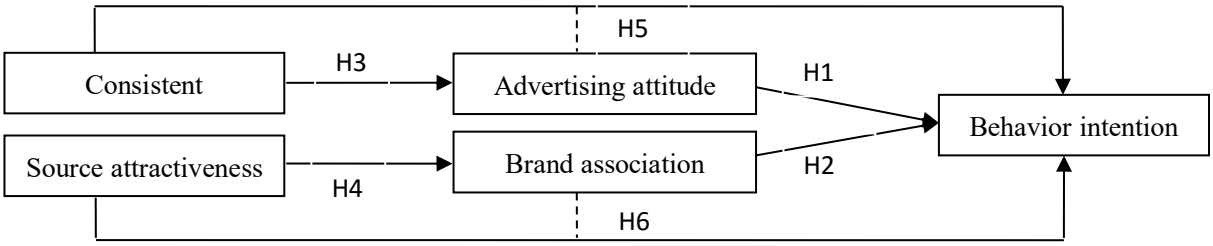

Fig1:Globa model of the research

Research method

- ***Design***

Before questionnaire investigation, this study introduce Taiwan 7-Eleven animation spokes-characters "Open-Chan" and its derivative industry through pictures and video advertising about Open-Chan's birthday and New Year. After having a certain understanding of survey content, respondents filled out the questionnaire. The most scopes of distribution are teachers, students, and consumers in the south campus of Sun Yat-Sen University et al. Questionnaire and interview process lasted for 15 minutes from December 28, 2015, to February 4th,2016. In order to avoid interference,

this study experienced two times pre-test stage with the same video and image content and find the most suitable survey questions.

Results

- ***Reliability and Validity Analysis***

Reliability analysis is mainly used to analyze the reliability and validity of the questionnaire. As for factor analysis of principal components, the maximal method in variance rotation was adopted in this study, factors with eigen values greater than 1, and research common factor greater than 0.5 factors(Hair, Anderson, Tatham, & Black, 1998). In addition, the study was adopted to measure the consistency of the items in the respective dimensions Cronbach' α value, a higher α value indicates higher reliability. Usually higher than 0.7and 0.98 is high-reliability value standards. From table 1,the Cronbach' α were higher than 0.8, thus indicating the reliability of the questionnaire should be acceptable, which conform to Hair et al.'s ideas.

In terms of validity, the questionnaire contents in this study are theory-based. The questionnaire contents of past researches served as references, which were revised and discussed with practical and academic experts. Then the questionnaire contents were amended again. Hence, there should be a considerable degree of face validity and content validity, 1998), and the items of factor loads in the respective dimensions with absolute values of greater than 0.5 were extracted(Shiau, 2014), as shown in Table 1.

Table 1: summary of reliability and validity analysis

Dimension		Cronbach's α	Dimension	Cronbach'sα
Behavior intention	Purchase intention	0.843	Advertising attitude	0.888
	Brand loyalty	0.894	Brand association	0.918
Consistence		0.874	Attractiveness	0.918

- ***Sample characteristics***

As shown in Table 2 that this study was distributed 635 questionnaires, a total of 583 valid questionnaires were recovered, with the valid questionnaire response rate of 91.8%. Among the study samples, average monthly income or pocket money, the respondents with less than 1,000 (RMB) disposable income accounted for 52.3%. In term of selection of animation spokes-characters endorsement of goods, the majority of respondents primarily considerate the attractiveness of animation spokes-characters, which account for 58.3%, followed by their pleasure(46.8%) and price (43.9%). It shows that the price of virtual spokesperson's endorsement is not the most important factor to promote consumers to purchase. In term of willing to pay for derivative products, with total 507 copies (86.9%), which showed that the majority of consumers are willing to buy animation spokes-characters subsequent derivative products.

Table 2: Sample Profile

Variable	Frequency	Percentage(%)	Variable	Frequency	Percentage (%)
Gender			Willing to pay for derivatives		
male	243	41.7	pay	507	86.9
female	340	58.3	Unpay	76	13.1
Age			Monthly pocket money		
< 16years old	219	37.6	Without	90	15.4
17-25 years old	298	51.1	< 1000RMB	305	52.3
> 26 years old	66	11.3	1001-2000 RMB	110	18.9
Education			2001-3500 RMB	14	2.4
Below senior high school	222	38.1	3501-5000 RMB	21	3.6
University	319	54.7	5001-8000 RMB	19	3.3
Master/Doctor degree	42	7.2	> 8001RMB	24	4.2

- ***Factor analysis***

In this study, Behavioral intentions, Advertising attitude, Brand association, the consistency between animation spokes-characters and brand, and Attractiveness of animation spokes-characters are in five dimensions by factor analysis (As shown in Appendix).

- ***Regression analysis***

As shown in table 3. Hypothesis1-a, regression coefficient is 0.661, F value is 249.343; sig ≤ 0.01, Hypothesis1-b,regression coefficient is 0.566. F value is 188.774, sig ≤ 0.01, this conclusion was confirmed scholar point of view(Wen, 2012) Therefore, Hypothesis 1, including H1-a and H1-b were established. Hypothesis 2-a, regression coefficient0.890,F value is 370.708, sig ≤ 0.01. Hypothesis 2-b, regression coefficient is 1.010, F value is 735.956 sig ≤ 0.01. This conclusion has confirmed scholars point of view (Koll & von Wallpach, 2014; Kotler & Keller, 2006), so Hypothesis 2 is established. Hypothesis 3,regression coefficient is 0.612, F value is 318.623, sig ≤ 0.01, which has confirmed Choi & Rifon(2012) point of view, Therefore, Hypothesis 3 is established.Hypothesis4, regression coefficient is 0.383, F value is 191.972, sig ≤ 0.01, which supported Walker & Dubitsky(1994) and Huang,(2011) point of view. Therefore, Hypothesis 4 is established.

Table3: Summary of Regression analysis

Variables		Unit regression		
Independent variables	Dependent variables	Regression coefficient	F	R^2
H 1: Advertising attitude (A)	1a. Purchase intention	0.661***	249.343***	0.300
	1b. Brand loyalty	0.566***	188.774***	0.245
H 2: Brand association (B)	2a. Purchase intention	0.890***	370.708***	0.390
	2b. Brand loyalty	1.010***	735.956***	0.559

H 3: Consistence (C)	Advertising attitude (A)	0.612***	318.623***	0.354
H 4: Source attractiveness (S)	Brand association (B)	0.383***	191.972***	0.248

*P<0.1，**P<0.05，***P<0.01

As shown in table 4, consistency was significantly and positively correlated with behavioral intention and advertising attitude, advertising as mediating variables have a significant relationship with behavioral intention. In mediating effect, the regression coefficient of consistency is 0.254; advertising attitude is 0.418, F value is 167.642, sig ≤ 0.01. Therefore, Hypothesis 5 was established. And the regression coefficient of Attractiveness is 0.173; the brand association is 0.672, F value is 429.647, sig ≤ 0.01. Therefore, hypothesis 6 was established.

Table 4: Summary of Regression analysis of the mediating effect

Variables	Independent variables		Dependent variables					
					Behavior intention		Behavior intention	Behavior intention
			Advertising attitude	Brand association	Purchase intention	Brand loyalty		
Mediating effect	H 5	Consistence	0.612***		0.552***			0.254***
		Ad attitude					0.608***	0.418***
		R^2	0.354		0.253		0.325	0.364
		F	318.623***		197.066***		279.176***	167.642***
	H 6	Attractiveness		0.383***	0.492***			0.173***
		Brand association					0.957***	0.672***
		R^2		0.248	0.258		0.575	0.596
		F		191.972***	201.576***		784.860***	429.647***

*P<0.1，**P<0.05，***P<0.01

Discussion

This study mainly explores the correlations of animation spokes-characters, including behavioral intention, advertising attitude, brand association, consistency, and attractiveness, as well as the mediating effects of advertising attitude and brand association. The whole hypothesis was established. Therefore, we suggest that before designing animation spokes-characters to its own brand, enterprises should fully consider the attractiveness and brand association of animation spokes-characters on consumer effect, which will lead to influence consumer's behavioral intentions. Such as animation spokes-characters Open-Chan in Taiwan 7-ELEVEn,who is popular for its consistency with brand and attractiveness, and respondents in China had desired to buy its derivatives for the same reason. Therefore, the new animation operation mode of the initial link can be established (shown in Fig 2).

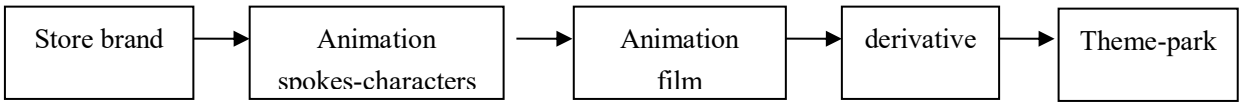

Fig 2: The framework of new operation mode of animation

Previous scholars focus on image or brand loyalty attitude to measure brand

association. However, this study has confirmed that is more suitable to explore brand association in brand attributes, future research can adopt this method.

Recommendations

At present, the United States, Japan, South Korea have successfully established their own animation mode of operation. However, China still remains on the elementary stage of exploring, mainly use Japanese animation operation mode, which is contained “comic design - animation film/TV - derivatives". Chinese animation operation mode lack of market research and development but foreign operation are designed from the cultural field of materials, developed movies and other media by creating cartoon characters, and finally developed its corresponding derivatives. According to this study, a new model of animation operation mode can help to maximize the impact of advertising efforts in order to generate positive behavioral intentions, marketers could use this research as a reference framework when selecting appropriate endorser.

The store brand of animation operation mode is not only benefited for a company to extends its diversity brand and industrial chain but also is good to expand market share of enterprises from different areas. At the same time, the new animation operation mode can help enterprises avoid image crisis of celebrity spokesperson, and break the limit of authorized animation spokes-characters, making up for the "gap" problems of existing animation operation mode after market long-term precipitation and accumulation. Therefore, enterprises can refer to this study new animation operation mode in the future.

Limitation

Due to the limited of advertising video and pictures production, this study is not perfect to show the image of 7-ELEVEn animation spokes-characters in Taiwan. During the investigation, advertising video and pictures are showed once time, respondents finish the questionnaire with his first response, which has a gap with advertisements in real life with repeated and long time reading. In addition, the representative of the sample is limited because it based on cost and time considerations, the respondents are focused on teacher and student groups, social groups are less.

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Appendix

Table 5: Summary of Behavior Intention Statistics

	Dimension	Questions	Factor load	Eigen value	coefficient	Cronbach' sα
I.	**1a. Purchase intention** KMO: 0.785*** (Shiau H-C, 2014)	I1.If 7-ELEVEn in Chinese mainland have Open-Chan, I will buy it	0.875	0.735	0.846***	0.843
		I2.If the price of Open-Chan in Chinese mainland have rose, I will also buy it	0.842	0.709	0.842***	
		I3.If the price of Open-Chan in Chinese mainland is the same as Taiwan, it is value	0.788	0.621	0.791***	
		I4.If other competitor sale animation characters product, I just buy Open-Chan product	0.813	0.661	0.822***	
	1b. Brand loyalty KMO: 0.879***	I5.7-ELEVEn is my first choice	0.859	0.737	0.862***	0.894
		I6.I will consume again in 7-ELEVEn	0.799	0.638	0.803***	
		I7.I am willing to buy a new product launched by 7-ELEVEn	0.832	0.693	0.831***	
		I8.I will recommend someone to consume in 7-ELEVEn	0.881	0.776	0.877***	

(Shiau H-C, 2014)	I9.The product quality of 7-ELEVEn is better than other competitor	0.816	0.666	0.815***	

Table 6: Summary of Advertising attitude and Brand association Statistics

Dimension		Questions	Factor load	Eigen value	coefficient	Cronbach's α
A. **Advertising attitude** KMO:0.881*** (Chia-Ching Tsai & Wu, 2011)		A1.Open-Chan give me positive feelings	0.753	0.566	0.749***	0.888
		A2. I like Open-Chan advertising	0.833	0.695	0.831***	
		A3.I prefer the advertising presentation of 7-ELEVEn	0.827	0.684	0.825***	
		A4.Open-Chan advertising is very interesting	0.853	0.728	0.851***	
		A5.Advertising can reflect the personality cheerful of Open-Chan	0.701	0.492	0.713***	
		A6.Advertising of Open-Chan can attract people's attention	0.830	0.688	0.829***	
B. **Brand association** KMO: 0.932*** (Romaniuk & Nenycz-Thiel, 2013) (Keller, 1993)	B1. Product attribute	b1.The prices of Open-Chan endorsement is reasonable	0.646	0.490	0.656***	0.918
		b2.the products of Open-Chan endorsement is various	0.679	0.501	0.679***	
		b3.The product design of Open-Chan is exquisite, simple packaging	0.691	0.561	0.694***	
	B2. brand attribute	b4.I can associate with Open-Chan and 7-ELEVEn brand color	0.572	0.520	0.603***	
		b5.I can associate with Open-Chan and 7-ELEVEn brand name				
		b6.I can associate with Open-Chan and 7-ELEVEn brand Slogan	0.671	0.667	0.698***	
		b7.The animation spokesman of 7-ELEVEn is different from others	0.659	0.611	0.682***	
			0.600	0.481	0.620***	
	B3.brand interest	b8.The environment of 7-ELEVEn is comfortable	0.675	0.516	0.661***	
		b9.The staff service quality of 7-ELEVEn is good	0.761	0.715	0.741***	
		b10.7-ELEVEn is popular by friends around me	0.708	0.607	0.694***	
		b11.Additional services of 7-ELEVEn is comprehensive and thoughtful	0.702	0.653	0.685***	
		b12.The experience of consume in 7-ELEVEn make me pleasure	0.774	0.710	0.758***	
	B4. Organizational attitudes	b13.7-ELEVEn full of social responsibility	0.698	0.504	0.687***	
		b14.The overall corporate image of 7-ELEVEn is good	0.686	0.545	0.667***	
		b15.When someone mentions 7-ELEVEn, I'll give it a great compliment.	0.747	0.566	0.743***	

Table 7: Summary of Consistence and attractiveness Statistics

Dimension	Questions	Factor load	Eigen value	coefficient	Cronbach's α
Consistence KMO:0.886*** (Chia-Ching Tsai & Wu, 2011)	C1.Open-Chan endorser 7-Eleven is reasonable	0.815	0.664	0.801***	0.874
	C2.Open-Chan endorser 7-Eleven is match	0.843	0.710	0.835***	
	C3.Open-Chan's headline is consistence with 7-Eleven	0.781	0.610	0.787***	
	C4.Open-Chan's image is associated with brand	0.704	0.496	0.725***	
	C5.Open-Chan's image is match-up with 7-Eleven	0.850	0.723	0.844***	
	C6.Open-Chan's personality is suitable to endorser 7-Eleven	0.711	0.505	0.712***	
Source attractiveness KMO:0.909*** (Wei & Wu, 2013)	S1.Open-Chan is cute	0.862	0.742	0.863***	0.918
	S2. Open-Chan is good looking	0.892	0.796	0.890***	
	S3. Open-Chan is attractiveness	0.899	0.80	0.894***	
	S4. Open-Chan is nice	0.888	0.789	0.883***	
	S5. Open-Chan is cheerful, lively, sunshine	0.762	0.580	0.754***	
	S6.I hope Open-Chan can be used as animation spokes-characters in inland 7-Eleven store	0.758	0.574	0.778***	

*P<0.1，**P<0.05，***P<0.01