A Study of the Acceptance of Technology Products among the Elderly People in Urban Taiwan



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The Coming of the Aging Society

- In aiding prevalent longevity, technology encounters personal as well as age-related problems such as physical and psychological deterioration and income reduction.
- A new market of wise-living technology is shaping for the elderly.
- It is to develop a user-centered technological system to better the quality of life in an aging society.

Double Effect of Aging and Fewer Children

Increase in average life

Inverted pyramid structure of population

Aging and fewer children make:

- the significance of manpower in caring
- double benefit if technology is brought into the Industry of caring

Aging Society – OECD Experiences

Increase in life expectancy leading to increase in dependency ratio

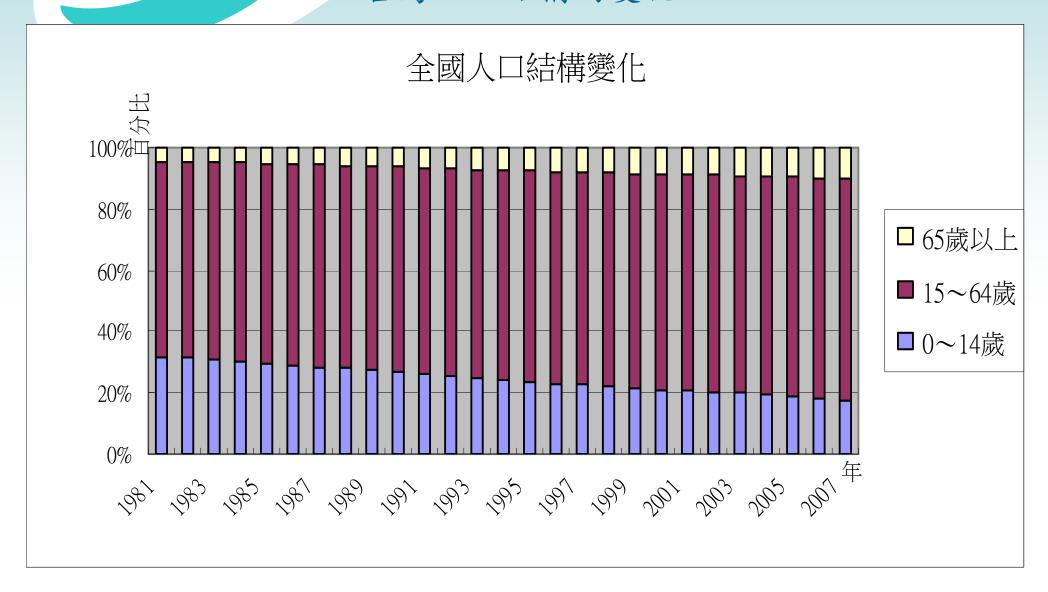
	1960	1990	2000	2010	2020	2030
OECD Average	61.6	51.6	49.6	48.9	53.8	60.7
Japan	56.1	43.7	46.4	56.0	65.6	67.4
Korea	82.7	44.6	38.9	40.3	41.6	52.5
<u>Taiwan</u>	92.0	<u>49.9</u>	<u>42.3</u>	<u>36.6</u>	<u>40.7</u>	<u>53.5</u>

Note: Dependency ratio refers to the percentage of 0-14 and above 65 years old in population.

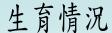
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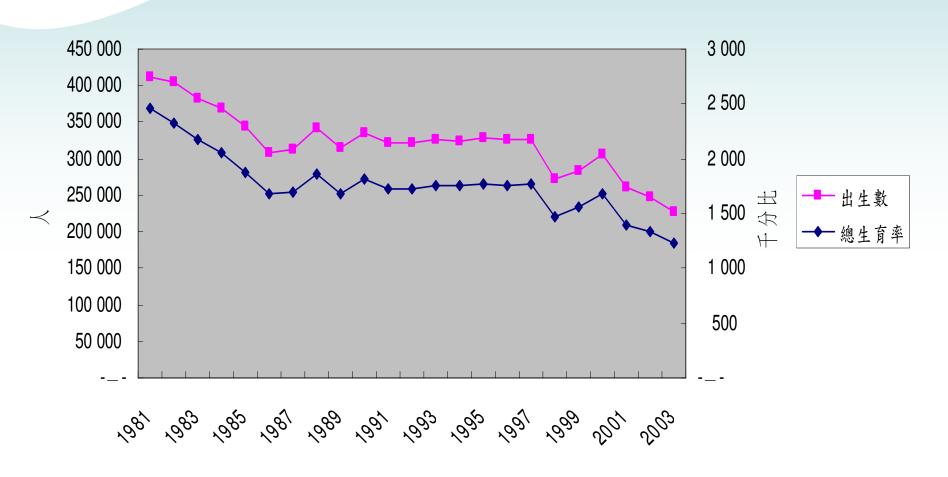
4

Structural Change in Taiwan's Population 台灣人口結構的變化



Rapid Decline in Birth Rate of Taiwan





中時 48 元岭新聞 06.11.26 (-)

四個月。因為獨自照顧媽媽,薛麗卿必須外 接濟過日子。 能靠政府每月五千元津貼以及兄弟姊妹些許 抽訪,認定薛麗卿打零工賺外快,因而止付 出買菜、添購日常用品・社工人員正巧到府 成無薪的「專業」照顧者。十年來,母女只 更慘的是,連逭五千元津貼也一度被停掉

的媽媽,辭去百貨公司售貨員工作,從此變

五十歲的薛麗卿為照顧七十九歲中風癱瘓

朱武智/台北報導

了母親,忍不住頻頻拭淚

與世隔絕」。她一肚 能離,薛麗卿漸漸「 就因為全心全力付

忍住。還好有位好朋友願意聽她傾訴,憂 只能一個人面對母親。有時想大喊或痛哭 家裡陪照服員,根本無法喘息。還好,她 顧媽媽,但媽媽害怕陌生人,她只好留在 喘息服務」,有照顧服務員到家裡幫她昭 修症病情才未惡化。 、發脾氣,又怕母親聽到會難過,她只好 住南部的弟弟近日北上幫忙,才減輕她的 薛麗卿渴望別人的幫助。雖然她申請

朱武智/台北報導

月五千元的津貼勉強度日,推估至少超過廿 障礙者,就必須有家人犧牲擔任「長工」, 甚至有四成一陷入經濟困頓,只能靠政府每 關團體統計〈只要家有重症癱瘓或重度身心 休假,任期約十年,最長超過廿年。根據相 **山萬個家庭。**

兼得占四三·九%·經濟陷入困頓占四一條原有的生活占五七·九%·事業與照顧難以原有的生活占五七·九%·事業與照顧難以 息」,四四・三%希望家人給予肯定與支持 照顧者平均每天照顧時數約十三・五五小時 期日為「家庭照顧者日」。這一天・讓六十 要隨時起床警戒,無休假又無收入。 ·比一般上班族的八小時高五〇%·夜間還 六萬名家庭照顧者的身心都能歇息。 〈家總公布「家庭照顧者現況調查」,家庭 六七.八%家庭照顧者期盼能「放鬆與休 家庭照顧者總會提倡每年十一月第四個星

> 顯著下降。因此,五六.四%期待家中其 會資源協助,家庭照顧者每日照顧的時間 他成員能關心被照顧的親人,五四%希望 調查發現,若有家人的幫助與分擔或社

投入,家庭照顧者也忘了自己年歲漸增、

家總秘書長陳穎叡指出,由於全心全力

占十六・五%。) 務來看,只有四一・一%申請利用過「居 身心健康亮起紅燈《從政府提供的照護服 用前述資源,原因包括社會資源不好用、 顧只占十五・六%・申請「居家喘息」與 「定點機構喘息」(新制一年合計十四天 由專人到宅照顧或送往機構照顧)合計 「日間照顧」的社區托老、托

她快撐不下 配合,以及提供服務的多元性不足。〉 數量不足、離家太遠、提供服務時間不能

接濟・母女倆才順利

也有情緒、也需要被關心,但事與願違, 經診斷罹患憂鬱症。 未婚的她哽咽說,她 子的苦水獨自承擔,

五%,社會資源不方便利用占二六、

Age of The Elderly Taking Care of The Elderly 老人照顧老人的時代



Who is Taking The Responsibility



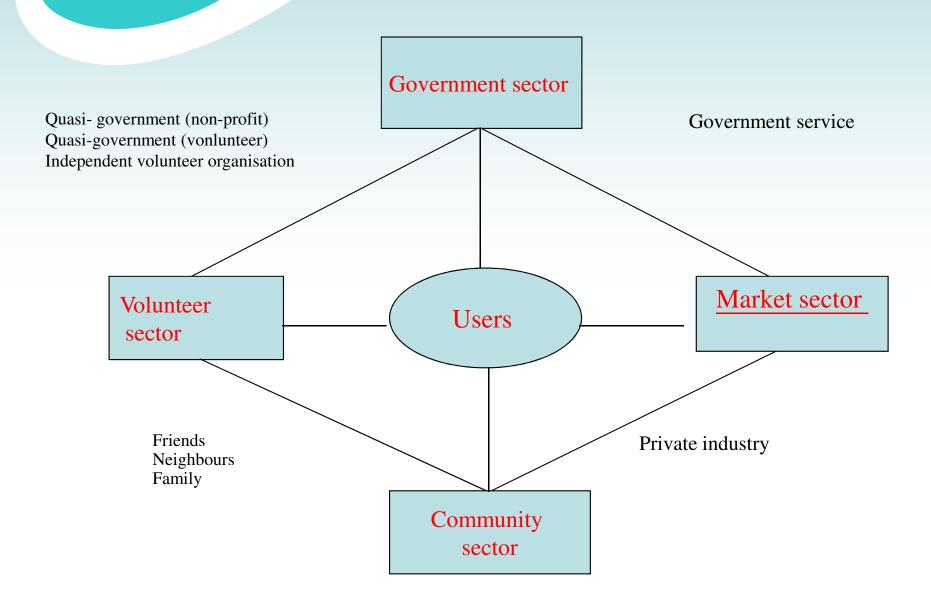
Too much Stress Drives a Woman To Smother Her in Law

不堪看護壓力 孝媳枕頭悶死婆婆



- 更新日期:2009/02/12 12:33 *李葆仁*
- ★90歲老人遭虐 被女看護狂毆.wmv

Social Care: Developing Service Provision of the Market Sector



Tawan YZU, Yen-Jen Chen

Transformation in Elderly Care: Aging in Place

De-hospitalization

De-institutionalization

Communalization

Familization

老人居家服務.mpeg

"Caring Industry Policy" in Contemporary Taiwan

016老人居家服務.mpeg

Range of the care service industry

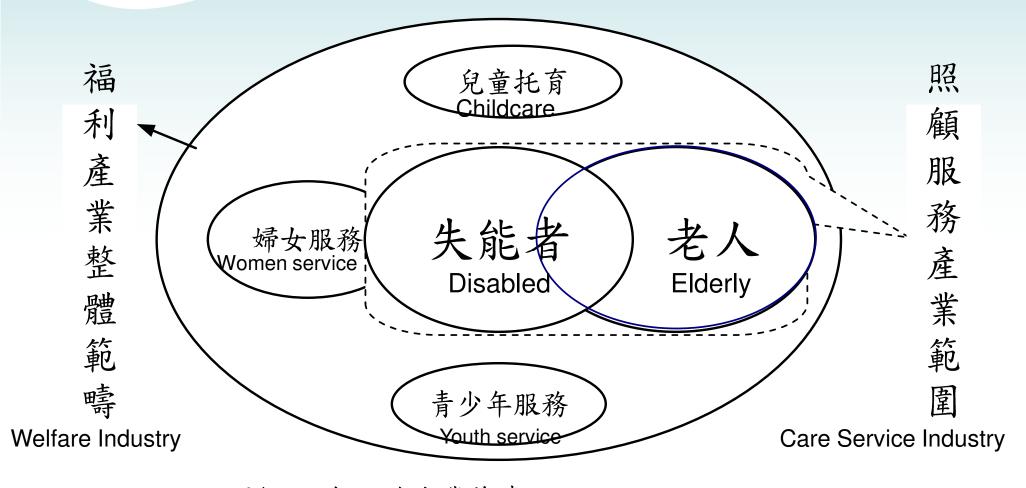


圖1:照顧服務產業範疇

資料來源:照顧服務產業推動執行手冊(經建會等,2003)

Long-term Carers' Pressure and Needs for Service

Carers' physical and mental health

Neglection of feelings and experiences

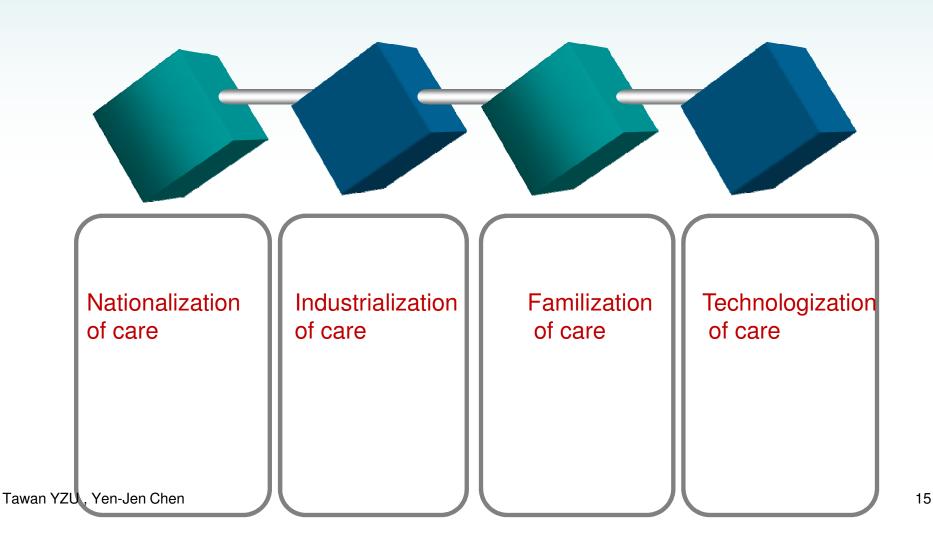
Long-term carers' pressure

Economic dependency and poverty

Carers' needs for welfare

Development of the Elderly Care Industry

- Industrialization of care service: nationalization, industrialization, familization and technogolization of care service since 2002.



Problems of the era of 'Two Waves'

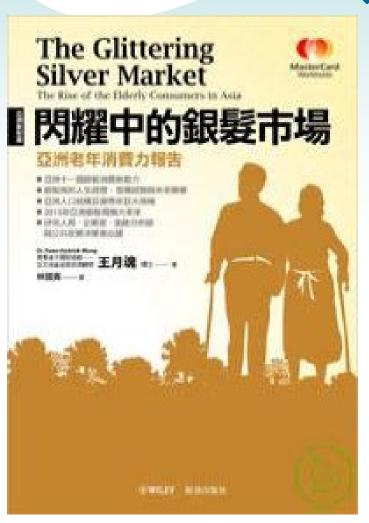
- 1. The elderly welfare technology becomes an important issue in the development of the aging society.
- 2. The elderly welfare technology must be improved by focusing on the elders' negative experiences with and resistance against the products so as to augment their acceptance and usage.
- 3. It is to make every elder enjoy the convenience brought by the technological life
- 4. It is an imperative tool for 'healthy aging', a dignified life in old age.

日本手機-健康管理.wmv 日本機器人進入廚房.avi



The Glittering Silver Market

閃耀中的銀髮市場



- ◎亞洲十一國銀髮消費新勢力
- ◎銀髮族的人生經歷、發展經驗與未來

願景

- ◎亞洲人口結構巨變帶來巨大商機
- ◎2015年亞洲銀髮商機大未來

聰明機器人 事事提醒防健. wmv ...\日本寵物高齡化 看護商機夯. wmv 日本機器人進入廚房. avi

Great Opportunities For Business of The Elderly

熟年商機不容小覷



- ○戰後嬰兒潮出生的熟年世代,歷經台灣經濟起飛,手中擁有全台灣55%以上的財富,他們是全台最有消費力的一群人。
- ◎當這群人進入熟年階段,家庭負擔變輕, 他們愈來愈肯為自己花錢,勢將成為消費 市場主流,引爆的熟年商機不容小覷。

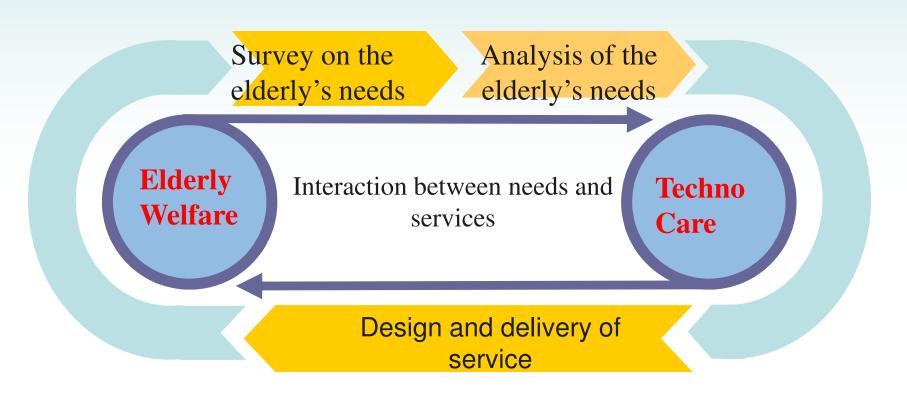
高臨社會來臨 銀髮族新產業正火熱.mpg

「熟年工藝」為銀髮族設計工具.wmv

「以房養老」規劃方案 65歲以上可貸5成.flv

[CM] 飛飛 - 銀寶善存.flv

Bilateral Interaction: Elderly Welfare and Techno Care



How Techno Products Suit the Needs of the Elderly in Daily Life

- Techno products are mostly for the youth and the professional, and very few for the elderly.
- To develop techno products and provide userfriendly environment for the elderly is an issue that requires serious attention in the aging society.

- The elderly industry is a new market full of potentials.
- A shining market: The elderly are becoming a new force of consumption in 11 Asian countries.
- Blooming business: The elderly are more willing to invest on themselves, hence are becoming a major force of consumption in the market.
- A platform for happy and independent living: 'Energy, Comfort and Adequate' have become a new mode of living for the elderly
- The elderly industry in Japan is blooming. The elderly have been widely targeted in terms of eating, clothing, living, transportation and entertainment.





圖片來源:樂齡經

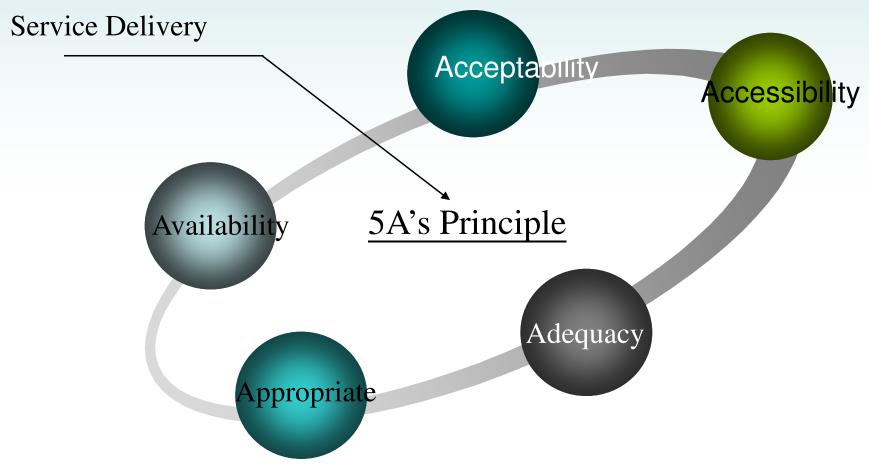
- Of the whole population of 22.7 million in Taiwan, those who are above 65 years of age comprise 10.4%. Where is the business:
 - Elderly recreation, nursing houses and elderly techno housing, elderly apartment, community care, long-term care.
 - Techno auxiliary appliance/toys, long-distance house care, elderly mobile phones, techno wheelchair.

- House delivery for the elderly, internet, continuing education, marriage industry for the elderly, counseling, funeral arrangement.
- Anti-aging products, elderly magazines, elderly tourism, elderly human power, elderly clinics.
- Health food, anti-aging meals, anti-aging drinks, and elderly care in medicine, nutrition and many others.

Factors for the Elderly to Accept Techno Products

- Primary factors in the elderly's acceptance of techno products: safety, convenience, and humane social support system.
- Moxley's 5As service delivery principle:
- 1. availability
- 2.adequacy
- 3.appropriate
- 4.acceptability
- 5.accessibility
- <u>+3</u>:
- **\phi** accountability
- **\phi** affordability
- $\mathbf{Quality}(Chen, 2009)\underline{\mathbf{0}}$

5A Technological Service Network



資料來源:(陳燕禎製作,2007:老人福利理論與實務:本土觀點。台北:雙葉書廊)

Aim

- Baby boomers after WWII in Taiwan have come into their old age. Developing the welfare technology for the elderly people is therefore a very important issue.
- The study aims to discuss the elders' acceptance of technology, and their experiences, barriers and expectations of operating interface and function improvement.

Method

• Quantitative method is adopted and focuses on those who are over the age of 50 and attend senior colleges in urban area. 403 questionnaires are gathered.

Aim

- 1. To explore the elderly's acceptance of techno products and the difficulties in operation.
- 2. To analyze the usage problems of the elderlyperceived usability, perceived ease of use, and expectation for the improvement of function.
- 3. To provide suggestions for the development of elderly welfare technology.

Literature Review (1)

 1.Studies suggest that baby boomers have more experiences in using technology and computer.

 Use of techno products becomes a new trend in the market of the elderly in view of the post-war baby boomers' higher education, better economy, and more experiences with technology.

Literature Review (2)

- 3. Galvin and Scherer in 1989 propose to :
- ◆Matching Person and Technology(MPT)
- Evaluation of auxiliary technology and its results must include three factors:
 - environment, people and technology.

Literature Review (3)

• Tahkokallio considers elderly welfare industry is an interdisciplinary development that emphasizes the idea of 'inclusive design'.

• In terms of auxiliary design, the real users are those who are closest to the elderly, such as the medical carers, caring children, and caretakers.

Literature Review (4)

- History of making daily life electronic appliance: the case of **Tatung Rice Cooker**:
- Tatung Rice Cooker was made in 1959. It challenged the habit of cooking at that time.
- Tatung Rice Cooker reduced the general fear by ease-to-use operation and adequate maintenance system.
- It has become a general household appliance and a must for the students studying overseas.

Literature Review (5)

- Most techno products exclude the needs of the elderly on account of operation.
- For example, because of physical deterioration, e.g. eyesight and hand mobility, and of the fact that the mobile phones are getting slimmer and smaller, the elderly are unable to see, let alone use, the mobile phones.
- The inconvenience with using techno products defeats the elderly.

Literature Review (6)

• Huang (2008) points out that the males of 60-70 years old use the mobile phone mostly to contact family or friends. Besides, 30 interviewees from 50s to above 80 indicate the reasons for not using mobile phones as (1) no need; (2) high rate; (3) self-limitation; (4) illiteracy.

• The elderly who have higher social participation and are female are more likely to use mobile phones.

Literature Review (7)

• Chen and Wu (2004) study the places where the elderly use life techno products most, and focus most on bedroom, kitchen and where family chores are carried out. If they are live with children, there are more computer-controlled products at home, and they are more willing to use them under the children's instruction.

• Chien (2008) finds through survey that the application of wise technology to home safety and health is generally considered as necessary.

Literature Review (8)

- Kuo (2001) finds that there are more males than females in using mobile phones, but the experience of which is mostly confined in 'dialing' rather than the in-built function of 'directory'.
- Chao (2004) finds from 90 interviewees that there is a steady decrease in time spent on mobile phone with the increase in age. For those above 65 years of age, there are 17 who use mobile phone every day.

Literature Review (9)

- The interface and functions of the techno products are alien to the elderly due to their lack of experience with them.
- The elderly are even more afraid that the products break because of their improper usage.
- Hence the elderly caution and even resist against using techno products out of fear. •

Literature Review (10)

- Usability is a common criterion for evaluation after product development.
- ISP made ISO9241-11 Guidance on Usability in 1998.
- In the Guidance 'usability' is defined as the 'effectiveness, efficiency and satisfaction of certain users under certain circumstances'.

Literature Review (11)

- Yue et. al. (2010) propose to design the products for the elderly along 4 criteria elderly-friendly interface, simple functions, stable system and instinctive usage based on their study of usability of 'Wise Pill Box and Reminder System'.
- Evaluation of acceptance is to make the researchers to understand the users' problems with and evaluation on the products.

Literature Review (12)

- On the acceptance of techno products, Fishbein and Ajzen (1975) propose the theory of reasoned action and suggest that intention, attitude, subjective norms and motivation may affect behaviors.
- Davis (1986) uses 'Technology Acceptance Model' (TAM) to explain, diagnose and predict the users' attitudes and behaviors in face of new information system.

Literature Review (13)

• Davis maintains that the external factors, i.e. the system's characteristics, design, operation, interface, and the training, documentation and consultation, all affect the users' cognition and value. Hence it is important that the techno products are equipped with 'perceived usability' and 'perceived ease of use', namely, easy-to-use interface design.

• Research Framework

• framework.docx

Research Analysis

- 1.Analysis on the demography of the respondents. (see table 1) (Table 1.docx)
- 2. Analysis on the previous experiences of using tech products. (see table 2) (Ttable 2.docx)
- 3.Ranking of the reasons for using/refusing tech products. (multiple choice, see table 3) (Table3..docx)

Chi-Square Test of Frequently Used Techno Products by the Middle Aged and Above Users

- Chi-square test of the frequently used techno products by the middle aged and above users:
 - 1.Chi-square test on 'perceived usability' (see table 4) (Table4.docx)
 - 2.Chi-square test on 'perceived ease of use' (see table 5) (Table5.docx)

Results

• The result shows whether the elderly people use technology products has highly significant relation with gender, education, occupation, health condition, monthly expenditure, residence and whether he or she attends senior colleges.

Conclusion and Suggestions

- ♠ A. Conclusion :
- (a) Reasons for the middle aged and above users to use techno products:
- 1.The most frequently used techno products by the middle aged and above users are products of 3C and entertainment, the reason being for the 'family necessity'. The reasons for NOT using techno products are mainly for 'little necessity', 'high cost' and 'usage problems
- 2.There are apparent differences along the interviewees' background, economic status, living condition, and experience with techno products.

- (b) Product price is also an important factor.
- (c) According to the chi-square test, there is significant relation between monthly income and the use of products.
- Hence the price of product should be made in accordance with the users' capabilities.

- ◆Expectations of the Middle Aged and Above Users for the Improvement of Operation.
- A. Problems of using techno products:
- 1. Procedure is too complicated.
- 2. Fonts are too small.
- 3. Messages are hard to understand.
- 4. The manual is Greek to me.
- 5. Bottoms are too small for my fingers.

- B. The 6 most expected functions of the interface are:
- 1.Bottoms on the interface are easy to use.
- 2.Remote control is easy to use.
- 3. Mouse is easy to use.
- 4.Imputation by screen touch is easy to use.
- 5.Imputation by keyboard is easy to use.
- 6.Stick control is easy to use.

- C. Findings suggest that 96.5% of the users who have negative experiences are willing to try the products again should the problems be improved.
- D. Chi-square test suggests that there is significant correlation between operation improvement and users' willingness to use products. The ratio is even higher amongst those who share average experience with technology.
- Thus it is known that the improvement on operation would increase the willingness to accept the products.

- ♦ According to the chi-square results:
- (a)There is significant difference along education, vocational status, and monthly expenditure in relation to the use of techno products. If improved, the functions such as image/description besides function bottoms, screen display of messages and image messages can simplify the operation and narrow the gap between different usage needs.
- (b)Thus the design for the elderly welfare products should fulfill the elderly's physical and mental needs as well as their economic affordability.

B. Suggestions (1)

- 1.The products should consider the age problem and fulfill the needs out of physical and mental deterioration.
- 2. The problems with fonts, function and operation should be countered.
- 3. There should be 'one touch' and 'one minute setup' functions in the products.
- 4. Price should consider the general affordability of the elderly.
- 5.Service should consider accessibility for the elderly and include children into the support system.
- 6.The products should aim for 'life integration' to increase their acceptance among the elderly.

Suggestions(2)

- Principles for the Development of the Elderly Welfare Products.
- Besides the 5As service delivery principles, attention should be paid to the following needs:
- 1.Usability of the products.
- 2.Easy-to-use of the products.
- 3.Good-to-use of the products.
- 4.Durability of the products.
- Market price should consider the affordability of the general public
- 1.Acceptability of price: A cheap and convenient market.
- 2.Convenience of service: A simple interface.
- 3.Friendliness of environment: A friendly service system.

B. Suggestions (3)

• Finally, the study also suggests that the technology products developed for elderly people must consider the need of those whose physical function degenerate, and improve the complicated operating interface and user barriers caused by it, and be designed in "one finger operating mode" and "one minute set up mode".

C. Research Limitation and Suggestions for the Future Study

- I. Research limitation
- (a)The research is a preliminary study targeted on the middle aged and above people.
- (b)The dependent variables are inductive and are more out of assumption; hence caution is required in citing.
- II. Suggestions for the future study
- (a) The research finds a highly significant relation between the elderly's acceptance of technology and the support system provided by computer courses. Future study can probe into the support system of the techno service.
- **(b)**Qualitative research should be conducted to collect deeper and more fundamental information.

熟年八大商機 台灣總計超過一兆元

- 商機1 醫療保健保健食品市場逼近三百億元
- 商機2 金融理財保險總值將達一千億元
- 商機3 養生住宅 美國市場將超過三百億元
- 商機4 學習才藝學習音樂成年人口攀升
- 商機5 休閒旅遊日本熟齡旅遊人數成長兩倍
- 商機6 科技智慧 上網購物潛在商機驚人
- 商機7 生活消費 創業者最易進入之行業
- 商機8 懷舊商品 音樂公司搶攻懷舊市場





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- · 樂齡生活事業股份有限公司 (L' elan Enterprise Co., Ltd.),是全國第一家以滿足銀 髮族食、衣、住、行、育、樂等 全方面需求為目標而成立的企業。
- 以「成為樂齡族群建構健康 〈身〉、喜樂〈心〉、平安〈靈〉 生活的補給站。」為公司事業願 景。
- 預計在十年內「成為華人區首屈 一指的銀髮生活事業平台」。

Elderly Industry and Business--Japan

銀髮產業與商機-日本

②日本的銀髮產業蓬勃發展,舉凡食衣住行育樂,皆有專以銀髮族為目標的產品

從<u>美國跨海到日本</u>,相中 了此一商機,為<u>中高齡女</u> 性打造適合她們的健身課





• 結合醫療的健身俱樂部

• 人要裝4654654 (2). wmv



提供優美的音樂、浪漫的燈光,同時還有健康的飲食,鎖定家庭市場

Thank You!