INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

IJRCM

IJRCM

CONTENTS

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

http://ijrcm.org.in/

iii

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

http://ijrcm.org.in/

iv

CALL FOR MANUSCRIPTS

We invite unpublished novel, original, empirical and high quality research work pertaining to the recent developments & practices in the areas of Computer Science & Applications; Commerce; Business; Finance; Marketing; Human Resource Management; General Management; Banking; Economics; Tourism Administration & Management; Education; Law; Library & Information Science; Defence & Strategic Studies; Electronic Science; Corporate Governance; Industrial Relations; and emerging paradigms in allied subjects like Accounting; Accounting Information Systems; Accounting Theory & Practice; Auditing; Behavioral Accounting; Behavioral Economics; Corporate Finance; Cost Accounting; Econometrics; Economic Development; Economic History; Financial Institutions & Markets; Financial Services; Fiscal Policy; Government & Non Profit Accounting; Industrial Organization; International Economics & Trade; International Finance; Macro Economics; Micro Economics; Rural Economics; Co-operation; Demography: Development Planning; Development Studies; Applied Economics; Development Economics; Business Economics; Monetary Policy; Public Policy Economics; Real Estate; Regional Economics; Political Science; Continuing Education; Labour Welfare; Philosophy; Psychology; Sociology; Tax Accounting; Advertising & Promotion Management; Management Information Systems (MIS); Business Law; Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labour Relations & Human Resource Management; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; International Relations; Human Rights & Duties; Public Administration; Population Studies; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism & Hospitality; Transportation Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic; Web Design and emerging paradigms in allied subjects.

Anybody can submit the **soft copy** of unpublished novel; original; empirical and high quality **research work**/**manuscript** *anytime* in *M.S. Word format* after preparing the same as per our **GUIDELINES FOR SUBMISSION**; at our email address i.e. infoijrcm@gmail.com or online by clicking the link **online submission** as given on our website (*FOR ONLINE SUBMISSION, CLICK HERE*).

GUIDELINES FOR SUBMISSION OF MANUSCRIPT

1.   **COVERING LETTER FOR SUBMISSION**:

                                                                                                                      DATED: _____

THE EDITOR

IJRCM

Subject: **SUBMISSION OF MANUSCRIPT IN THE AREA OF _____.**

(e.g. Finance/Mkt./HRM/General Mgt./Engineering/Economics/Computer/IT/ Education/Psychology/Law/Math/other, please specify)

DEAR SIR/MADAM

Please find my submission of manuscript titled '_____' for likely publication in one of your journals.

I hereby affirm that the contents of this manuscript are original. Furthermore, it has neither been published anywhere in any language fully or partly, nor it is under review for publication elsewhere.

I affirm that all the co-authors of this manuscript have seen the submitted version of the manuscript and have agreed to inclusion of their names as co-authors.

Also, if my/our manuscript is accepted, I agree to comply with the formalities as given on the website of the journal. The Journal has discretion to publish our contribution in any of its journals.

NAME OF CORRESPONDING AUTHOR	:
Designation/Post*	:
Institution/College/University with full address & Pin Code	:
Residential address with Pin Code	:
Mobile Number (s) with country ISD code	:
Is WhatsApp or Viber active on your above noted Mobile Number (Yes/No)	:
Landline Number (s) with country ISD code	:
E-mail Address	:
Alternate E-mail Address	:
Nationality	:

* i.e. Alumnus (Male Alumni), Alumna (Female Alumni), Student, Research Scholar (M. Phil), Research Scholar (Ph. D.), JRF, Research Assistant, Assistant Lecturer, Lecturer, Senior Lecturer, Junior Assistant Professor, Assistant Professor, Senior Assistant Professor, Co-ordinator, Reader, Associate Professor, Professor, Head, Vice-Principal, Dy. Director, Principal, Director, Dean, President, Vice Chancellor, Industry Designation **etc**. *The qualification of author is not acceptable for the purpose*.

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

http://ijrcm.org.in/

V

NOTES:

a) The whole manuscript has to be in *ONE MS WORD FILE* only, which will start from the covering letter, inside the manuscript. *pdf. version is liable to be rejected without any consideration*.

b) The sender is required to mention the following in the **SUBJECT COLUMN of the mail**:

New Manuscript for Review in the area of (e.g. Finance/Marketing/HRM/General Mgt./Engineering/Economics/Computer/IT/Education/Psychology/Law/Math/other, please specify)

c) There is no need to give any text in the body of the mail, except the cases where the author wishes to give any **specific message** w.r.t. to the manuscript.

d) The total size of the file containing the manuscript is expected to be below **1000 KB**.

e) Only the **Abstract will not be considered for review** and the author is required to submit the **complete manuscript** in the first instance.

f) *The journal gives acknowledgement w.r.t. the receipt of every email within twenty-four hours* and in case of non-receipt of acknowledgment from the journal, w.r.t. the submission of the manuscript, within two days of its submission, the corresponding author is required to demand for the same by sending a separate mail to the journal.

g) The author (s) name or details should not appear anywhere on the body of the manuscript, except on the covering letter and the cover page of the manuscript, in the manner as mentioned in the guidelines.

2. MANUSCRIPT TITLE: The title of the paper should be typed in **bold letters**, **centered** and **fully capitalised**.

3. AUTHOR NAME (S) & AFFILIATIONS: Author (s) **name**, **designation**, **affiliation** (s), **address**, **mobile/landline number** (s), and **email/alternate email address** should be given underneath the title.

4. ACKNOWLEDGMENTS: Acknowledgements can be given to reviewers, guides, funding institutions, etc., if any.

5. ABSTRACT: Abstract should be in **fully Italic printing**, ranging between **150** to **300 words**. The abstract must be informative and elucidating the background, aims, methods, results & conclusion in a SINGLE PARA. *Abbreviations must be mentioned in full*.

6. KEYWORDS: Abstract must be followed by a list of keywords, subject to the maximum of **five**. These should be arranged in alphabetic order separated by commas and full stop at the end. All words of the keywords, including the first one should be in small letters, except special words e.g. name of the Countries, abbreviations etc.

7. JEL CODE: Provide the appropriate Journal of Economic Literature Classification System code (s). JEL codes are available at www.aeaweb.org/econlit/jelCodes.php. However, mentioning of JEL Code is not mandatory.

8. MANUSCRIPT: Manuscript must be in *BRITISH ENGLISH* prepared on a standard A4 size *PORTRAIT SETTING PAPER*. *It should be free from any errors i.e. grammatical, spelling or punctuation. It must be thoroughly edited at your end*.

9. HEADINGS: All the headings must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.

10. SUB-HEADINGS: All the sub-headings must be bold-faced, aligned left and fully capitalised.

11. MAIN TEXT:

THE MAIN TEXT SHOULD FOLLOW THE FOLLOWING SEQUENCE:

INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESIS (ES)

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

LIMITATIONS

SCOPE FOR FURTHER RESEARCH

REFERENCES

APPENDIX/ANNEXURE

The manuscript should preferably be in *2000 to 5000 WORDS*, But the limits can vary depending on the nature of the manuscript.

12. **FIGURES & TABLES:** These should be simple, crystal **CLEAR**, **centered**, **separately numbered** & self-explained, and the **titles must be above the table/figure**. **Sources of data should be mentioned below the table/figure**. *It should be ensured that the tables/figures are referred to from the main text*.

13. **EQUATIONS/FORMULAE:** These should be consecutively numbered in parenthesis, left aligned with equation/formulae number placed at the right. The equation editor provided with standard versions of Microsoft Word may be utilised. If any other equation editor is utilised, author must confirm that these equations may be viewed and edited in versions of Microsoft Office that does not have the editor.

14. **ACRONYMS:** These should not be used in the abstract. The use of acronyms is elsewhere is acceptable. Acronyms should be defined on its first use in each section e.g. Reserve Bank of India (RBI). Acronyms should be redefined on first use in subsequent sections.

15. **REFERENCES:** The list of all references should be alphabetically arranged. ***The author (s) should mention only the actually utilised references in the preparation of manuscript*** and they may follow Harvard Style of Referencing. **Also check to ensure that everything that you are including in the reference section is duly cited in the paper**. The author (s) are supposed to follow the references as per the following:

- All works cited in the text (including sources for tables and figures) should be listed alphabetically.

- Use (**ed.**) for one editor, and (**ed.s**) for multiple editors.

- When listing two or more works by one author, use --- (20xx), such as after Kohl (1997), use --- (2001), etc., in chronologically ascending order.

- Indicate (opening and closing) page numbers for articles in journals and for chapters in books.

- The title of books and journals should be in italic printing. Double quotation marks are used for titles of journal articles, book chapters, dissertations, reports, working papers, unpublished material, etc.

- For titles in a language other than English, provide an English translation in parenthesis.

- *Headers, footers, endnotes* and **footnotes** *should* **not** *be used* in the document. However, **you can mention short notes to elucidate some specific point**, which may be placed in number orders before the references.

PLEASE USE THE FOLLOWING FOR STYLE AND PUNCTUATION IN REFERENCES:

BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.

- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–23

UNPUBLISHED DISSERTATIONS

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

OPTIMAL EFFICIENCY OF INNOVATIVE DESIGN FOR PRODUCT DEVELOPMENT

CHENG-WEN LEE
PROFESSOR
DEPARTMENT OF INTERNATIONAL BUSINESS
CHUNG YUAN CHRISTIAN UNIVERSITY
TAIWAN

BING-YI LIN
RESEARCH SCHOLAR
COLLEGE OF BUSINESS
CHUNG YUAN CHRISTIAN UNIVERSITY
TAIWAN

ABSTRACT

Due to help enterprises today dealing with multi purposes in the market, we need to create a design, that would break the stereotype of traditional design process. So that modification of organization in product strategy is needed. Namely observe the trend of market and the demand of quality, the designer should apply the customer satisfaction questionnaires, and analyze them with various experimental processes. These methodologies would help designers to have better understanding of their customers and judge the market size and clustering validity, by diverse product strategies for dealing with today's rapid changing. Taking innovative design on telephone as an experimental case, can investigate how to lead the product to market-oriented and customized management concepts, which creative design ability is utilized for a product. Accompanied with an innovative product value, the product can animate the progress of the development of the enterprise management, which has become the main issue on the social and economical development in every developed country.

KEYWORDS
fuzzy theory, innovation design, multi criteria decision making (mcdm), optimal efficiency.

1. INTRODUCTION

When facing this competitive era on product and globalization, it is important to create a design that will break the stereotype of traditional design process. This situation leads the team into innovation. The enterprises now face many management dilemmas and must take the team into internationalization, which means the application of creative product design to produce the varieties, functions, appearance, user, market compartment, price diversity, etc. in order to satisfy the demand of consumers. Basically, the process from taking the mode into practice to reveal the good fortune and convenience can precisely predict the technique development, demand, and service time (Tseng., 2002).

In order to help enterprises today dealing with multi purposes in the market, the modification of organization in product strategy is needed. The product design not only requires expansion on dimensions, but also the extent in different development levels. Pursuit of high productivity is a crucial step for an enterprise. Whether the enterprise can be sustainable depends on the transformation of innovative product design which plays an important role in this period. However, due to the limit on time and resources, the enterpriser cannot completely consider the problems of decision making.

The research model on traditional product design process is based on an optimization mechanism of choice. In substance, the calculation is based on a sequence of product design establishment. However, the strategy makers cannot understand the essence of the problem while facing a structural strategy problem, whether or not the optimization could calculate the result of product design. Whereas multi criteria decision making (MCDM) analyses tend to focus on the arrangement and distribution of purposes, especially under the situation that few coherent strategies were made (Carlos, 2004).

Previous researchers have developed various approaches to address this problem. For example, in the recent years, self-learning and material exploring have become two of effective studying tools. These focus on the qualification course of strategy making, and the unpredictable environmental change instead of changing of time. Therefore, material exploring changes the way of knowledge acquisition, which has become an important way in work (Hirotaka, 2005).

Next, according to Analytical Hierarchy Process, this study set up a product decision making system, Fuzzy set theory, and the Multi criteria decision making analysis in order to produce the best quality and best service for consumers, to establish the marketing predominance in the market, and to create the best benefit in product, show in Figure 1.

FIG. 1: FLOW DIAGRAM OF THE PROPOSED SYSTEM
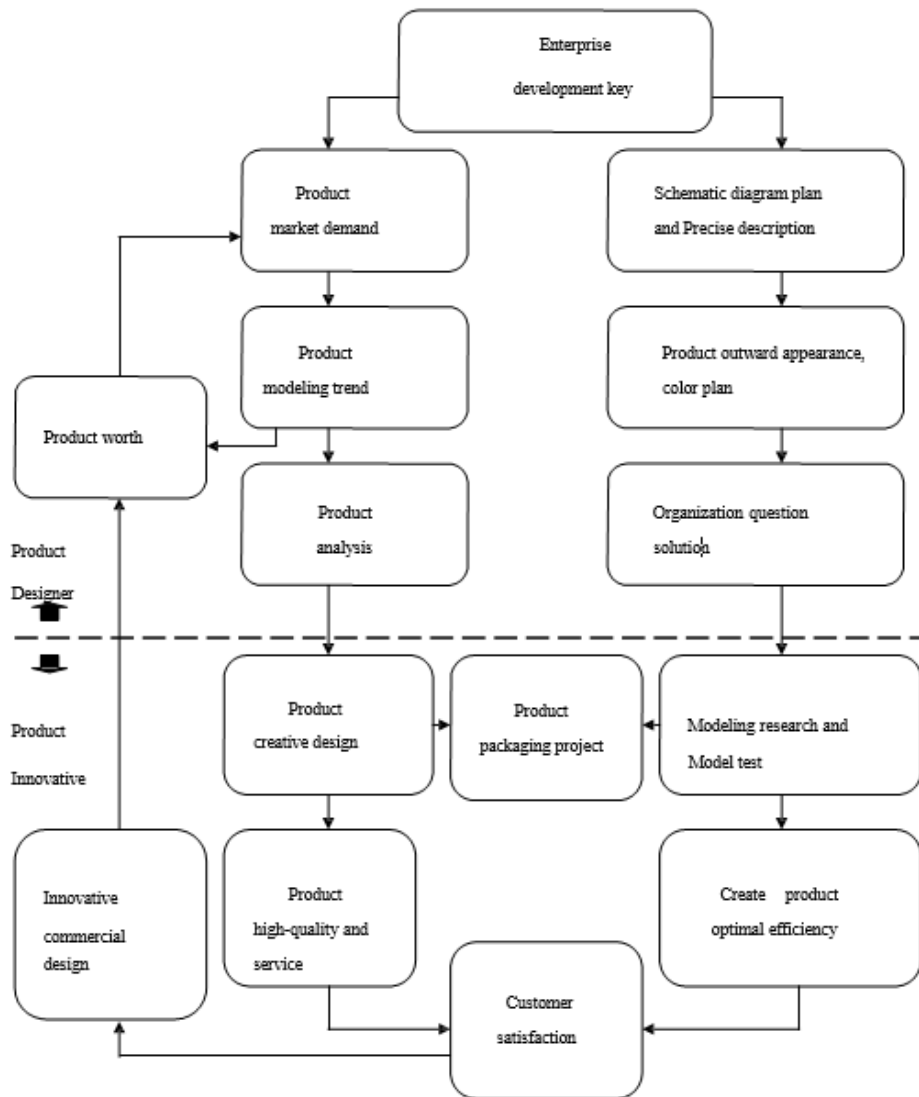
2. PROPOSED METHOD

This research obtains valid questionnaires to be the research target samples. The researchers mainly focus on evaluating the preference of values among users. So the goal is to create a feasible progress chart in the shortest time to deal with problems encountered. Divide the research methods into four stages in this article, show in Figure 2.

FIG. 2: IMPLEMENT PHASES OF THE PROPOSED METHOD
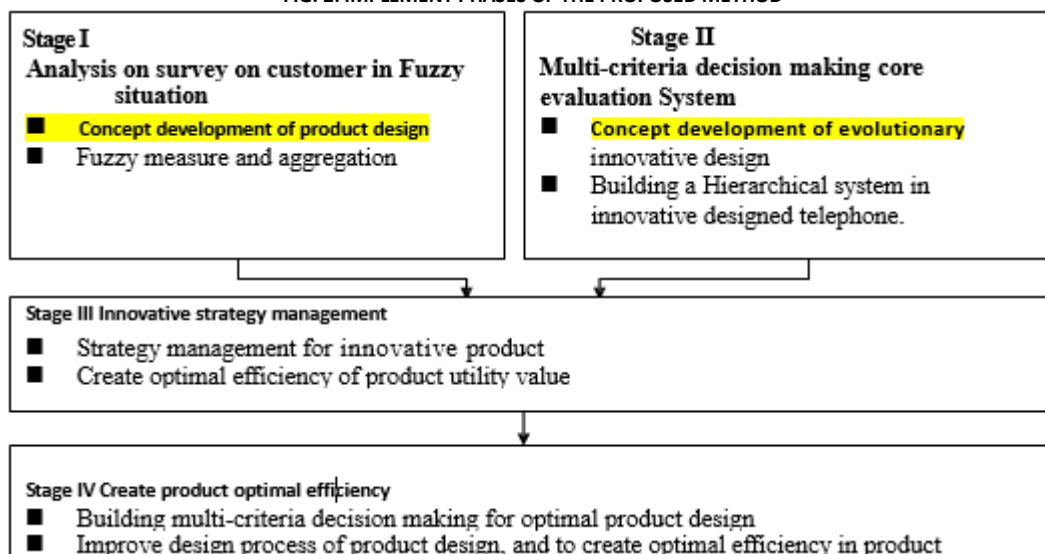
2.1 METHOD

Adequate information and data are needed while strategy makers' face the problems during the procedure of product design. However, the data or information may contain multi-uncertainty or Fuzzy situations; hence, they have to adapt Fuzzy theory and MCDM theory analysis, that is, one kind of programs and techniques of designing plan to solve the problems in product designing. These methods depend on good knowledge models and expansion ability, which focus on limited, but effective sustainable learning (Peter I., 2003).

2.2 FUZZY MEASURE AND AGGREGATION

The purpose of Fuzzy theory is to assist strategy makers in realizing the product quality for consumers' demands including safety, usability, price, function, material, main faculty, and etc., and also in simplifying the product. In addition, the product designers can know the demand model of consumers with using various design techniques and methodologies to complete the synthetic drilled by analyzing the appearance and color in nowadays in various products. Therefore, the designers can solve the existing problems for product users; moreover, these processes can promote the design of product creation.

2.3 CONCEPT DEVELOPMENT

During the process of development of evolutionary innovative in designing high quality products, the designers must understand the oral-required qualities of demands and take those elements into consideration for the experimental samples. These elements include quality, usability, material, price, battery, and etc. The strategy makers enable to evaluate product designs by calculating these elements.

2.4 BUILDING INNOVATIVE TELEPHONE

A hierarchy system for Innovative designed telephone research focuses on a modeling approach and a set of mathematical tools that were derived from research on intelligence systems, namely, modeling. For each decision problem, a competence set is necessary and consists of ideas, knowledge, information, and skills for successfully solving the problem (Hu Yi-chung., 2003).

Evaluation methods not only are taken as a solution to the traditional product design, but also to modify the efficiency of the design itself. Therefore, strategy makers can get the division by dividing the available questionnaire replies according to their features, show in Figure 3.

FIG. 3: BUILDING A HIERARCHICAL SYSTEM IN INNOVATIVE DESIGNED TELEPHONE
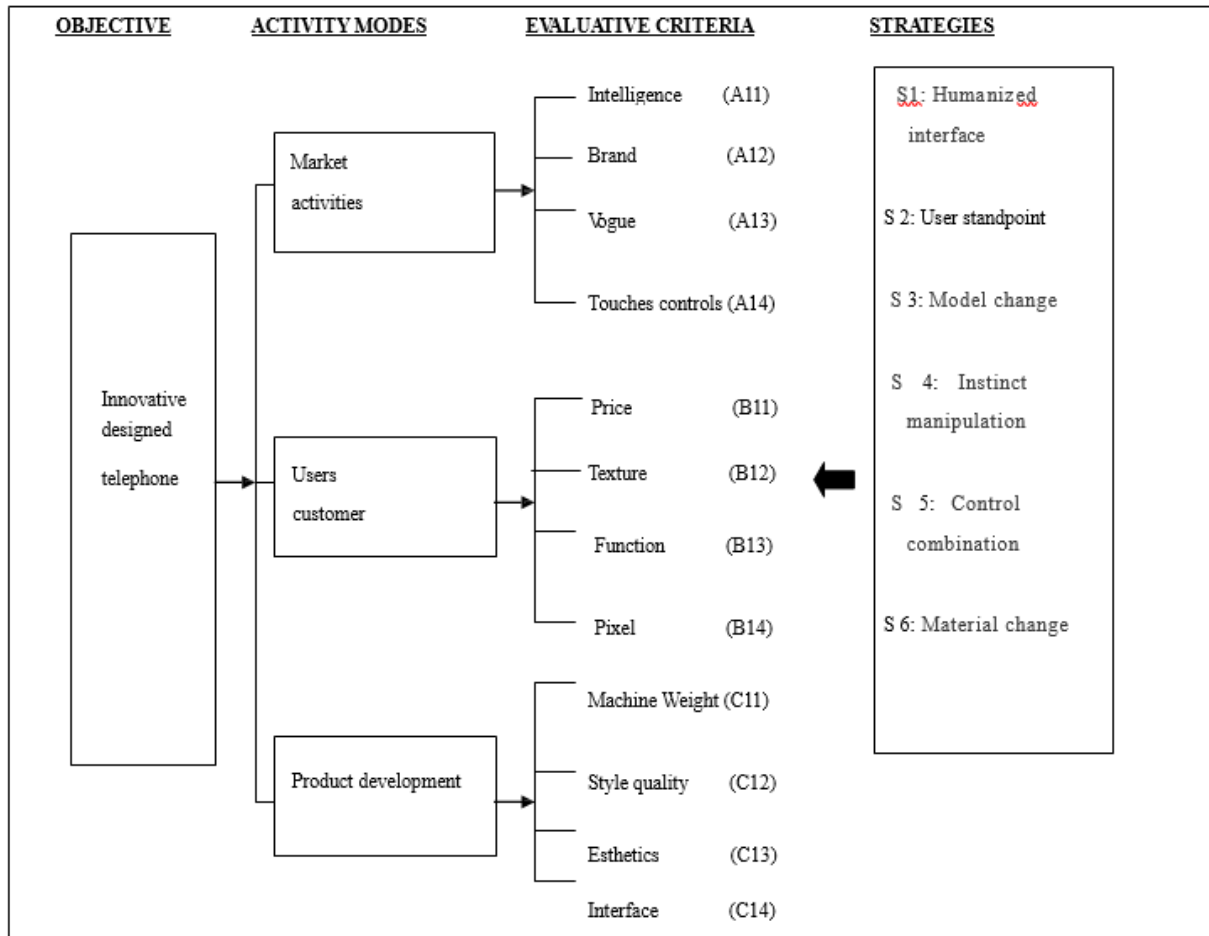
2.5 STRATEGY MANAGEMENT

After collecting the questionnaires, the researchers are going to quantify the product designing on the beginning of the experiment. We use Hierarchical Clustering to design a series of virtual creative products and services. Comparing with similar desire and demand, we have to divide various customers into groups. We can realize the demand intensity and propose so the overall product makes it convenient and practical to use for customers. Moreover, we can realize the demand of customers and achieve the required service.

2.6 CREATE PRODUCT DESIGN

The application of innovative design can stimulate the product design. Therefore, how to efficiently apply the innovative interface, to explore new usages, and to facilitate the users to use the interface intuitively have become the mainstream of design.

2.7 BUILDING MULTI-CRITERIA DECISION MAKING

Multi-criteria decision making (MCDM) involves determining the optimal alternative among multiple, conflicting, and interactive criteria. Many methods are based on multiple attribute utility theory. For example, goal programming is an analytical approach devised to address decision making problems where targets have been assigned to all the attributes and where the decision maker is interested in minimizing the non-achievement of the corresponding goals (Hirotaka., 2005).

2.8 IMPROVE DESIGN PROCESS

Techniques for machine learning have been extensively studied in recent years as effective tools in data mining. Although there have been several approaches to machine learning, we focus on the mathematical programming approaches in this paper. The environment of decision making changes over time. Therefore, we have to revise knowledge obtained from data mining according to the change of environment. To this end, additional learning becomes an important task in machine learning (Hu Yi-chung., 2003).

3. CASE STUDIES 1: DATA ANALYSIS AND RESULTS

3.1 PROBLEM DESCRIPTION

Analyze the demand of telephones according to Fuzzy situation. With the technological design, the product must be friendly designed in its HCI. It will be more popular in the screen of analysis. Innovative design telephone products can strongly accelerate the product design to new trend.

The esthetic value is highly praised in the innovative designed. With the combination of wisdom, fashion, and various materials, it can definitely get out of the stereotype of traditional ones to create a classic one made in high quality and humanized. Form inferring the innovative designed phone, we can list the rankings as Intelligence, Brand, Vogue, Touches controls, Price, Texture, Function, Pixel, Weight, Style, Esthetics, Interface, and etc.

According to Figure 2, the analysis task comprised of four stages:

(1) Analysis on survey on customer in Fuzzy situation

(2) Multi-Criteria Decision Making core evaluation System

(3) Innovative strategy management

(4) Create product optimal efficiency

It is observed that the least number of descriptions used is 60. The majority of the subjects were utilized between 60 descriptions. In usage of 60 descriptions, the choice of purchasing telephones was made most frequently for telephone ages/3 years, in Figure 4.

FIG. 4: FREQUENCY DISTRIBUTION AND PURCHASE TELEPHONE AGES/3 YEARS
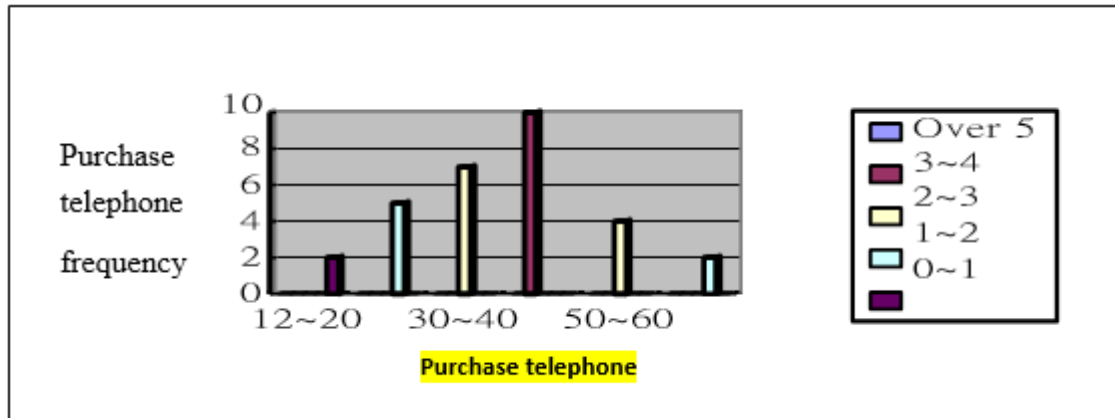
FIG. 5: EXPRESSION TELEPHONE ACTIVITY BRANDS
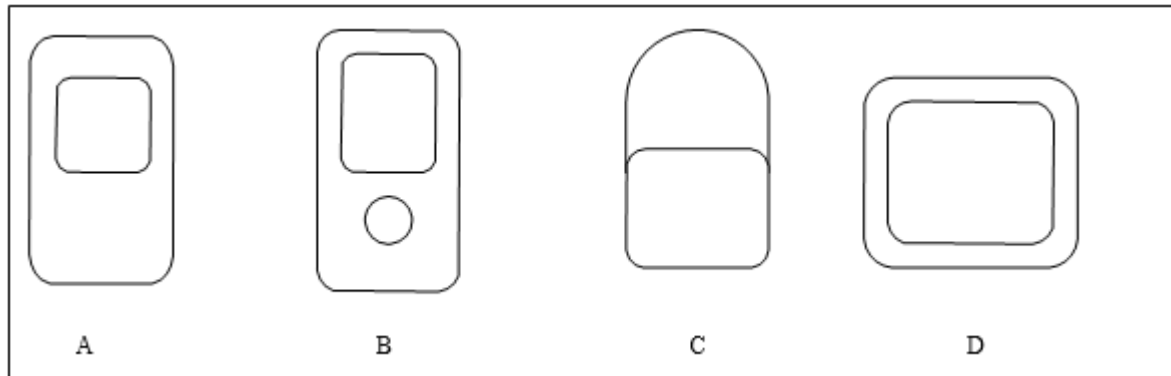
3.2 EXPRESSION TELEPHONE OF ACTIVITY MODES

Regarding to 60 descriptions, Figure 4 displays that the frequency distribution of descriptions are listed as purchases telephone brands, features in Market activities, Users' customs, Product developments, and expression support numbers. For example, innovative designed telephone screen and the features of innovative designed telephone play two of critical factors in the experimental outcome. This shows that the solution lies in the combination of feature design brand, A, B, C, and D.

The outstanding performance of innovative designed telephone brand in the competitive market is accomplished within the promising R&D and design according to the market.

3.3 TELEPHONE BRAND AND FEATURE

The outstanding performance of innovative designed telephone brand in the competitive market is accomplished within the promising R&D and design according to the market and customer demands. Therefore, it is important to specifically realize the demand of customers according to their various demands, and to satisfy individual demands among all sorts of consumers. The 60 descriptions were mingled randomly and then provided to each expert, show in Table 1.

TABLE 1: TELEPHONE BRAND AND FEATURE

Telephone Feature Brand	Market activities	Users customer	Product development
A	34	32	30
B	13	10	11
C	2	1	1
E	6	6	7

The combination of designed feature in innovative designed telephone brand (A) gets the optimal efficiency in product design. It contains a completely profound function and system.

3.4 DETERMINING OF EVALUATING CRITERIA

The researchers set up telephone brand decision system by decomposing the problem into a hierarchy of interrelated elements.

These 60 descriptions were evaluating criteria of designed telephone provided to each element, show in Table 2.

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT   30

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

http://ijrcm.org.in/

TABLE 2: INNOVATIVE DESIGNED TELEPHONE FOR EVALUATING CRITERIA

Telephone feature evaluating criteria		
Elements	Frequency	Percentage
Market activities	6	10%
Users customer	23	44%
Product development	24	46%

To combine of designed feature in innovative designed telephone for evaluating criteria Product development, 46% of the 60 descriptions reach the optimal Evaluating criteria frequency in product design.

3.5 EVALUATING CRITERIA OF DESIGNED TELEPHONE

This stage generates input telephone data consisting of pairwise comparative judge of decision elements. The plan tested individually on Mode 1 Market activities: Intelligence A(11), Brand A(12), Vogue A(13), Touches controls A(14), Mode 2 Users customer: Price B(11), Texture B(12), Function B(13), Pixel B(14), Mode 3 product development: Weight C(11), Style C(12), Esthetics C(13), Interface C(14), and etc., show in Table 3.

TABLE 3: EVALUATING CRITERIA OF DESIGNED TELEPHONE

Evaluating criteria of users customer (0.1~1.0)

Evaluating criteria elements	20~30Ages	30~40Ages	40~50 Ages	Mean
1. Market activities				
Intelligence	0.8	0.7	1.0	0.83
Brand	0.9	0.9	0.7	0.83
Vogue	1.0	0.8	0.6	0.8
Touches controls	0.7	0.7	0.7	0.7
2. Users customer				
Price	0.9	1.0	0.8	0.9
Texture	0.8	0.9	0.8	0.83
Animation Function	1.0	0.8	0.7	0.83
Pixel	0.5	1.0	0.6	0.7
3. Productdevelopment				
Machine Weight	0.4	0.4	0.5	0.43
Style quality	0.8	1.0	0.9	0.9
Interface	0.7	0.8	0.6	0.7
Total	9.1	9.8	8.5	0.76

To combine of designed feature in evaluating criteria of designed telephone for evaluating criteria 30~40 ages, 9.8 from all descriptions get the optimal evaluating criteria of user's customer in product design.

3.6 CALCULATING SYNTHETIC UTILITIES

Depending on 60 descriptions, the discrimination is 6 customer groups, and mode 4 product developments: Machine weight, Style quality, Esthetics, and Interface. Using the decision system of more than targets decides the preference of product. The first group emphasizes interactive benefit; the second emphasizes quality, and the third emphasizes functions. Their preferences are style quality and esthetics. So a chart is made to show the group preferences, show in Table 4.

TABLE 4: CONSUMERS PREFERENCE OF PRODUCTS

Group user hobby	User values
First group mode	Machine weight
Second group mode	Style quality
Third group mode	Price
Four group mode	Function

Calculating data from 60 descriptions, 6 customer groups demonstrate five main means which are 0.06, 0.15, 0.21, and 0.58 as their preference values. In addition, Machine weight is 0.06, Style quality 0.15, Price 0.21, and Function 0.58, show in Table 5.

TABLE 5: NUMBER OF DESCRIPTIONS SUPPLIED IN EACH CUSTOMER GROUP

Third group mode	Customer groups						Mean
	1	2	3	4	5	6	
Machine weight	0.08	0.05	0.07	0.05	0.05	0.06	0.06
Style quality	0.16	0.14	0.15	0.14	0.15	0.14	0.15
Price	0.21	0.18	0.24	0.21	0.19	0.23	0.21
Function	0.54	0.59	0.63	0.58	0.57	0.57	0.58

In Table 5, in order to get the final question point and then to solve the problem in Function, the researchers design the research method to achieve customer purchase product satisfaction.

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

http://ijrcm.org.in/

31

3.7 INNOVATIVE STRATEGY MANAGEMENT

According to Table 5, using data from 60 descriptions, this analysis discloses on the elements of innovative designed telephones: Mode 1 Market activities: Intelligence(A11), Brand A(12), Vogue A(13), Touches controls(A14), Mode 2 User's custom: Price B(11), Texture B(12), Function B(13), Pixel B(14), Mode 3 Product innovative development: Weight C(11), Style C(12), Esthetics C(13), and Interface C(14).

Depending on the development of telephone industry, the necessity of low cost, high flexibility in the superiority of production, and the demand of humanized product should be controlled to influence the concept of design and the development of crucial modules enormously, show in Table 6.

TABLE 6: ESTABLISH THE USER'S TELEPHONE OF PERFORMANCE MATRIX

Evaluation Strategy	A11	A12	A13	A14	B11	B12	B13	B14	C11	C12	C13	C14
S1: Humanized Interface	(0.8,0.6)	(0.8,0.7)	(0.7,0.7)	(0.8,0.8)	(0.9,0.9)	(0.6,0.6)	(0.9,0.9)	(0.6,0.6)	(0.5,0.5)	(0.9,0.9)	(0.8,0.8)	(0.7,0.7)
S 2: User standpoint	(0.8,0.8)	(0.7,0.9)	(0.8,0.8)	(0.8,0.8)	(1,0.9)	(0.5,0.6)	(0.8,0.8)	(0.7,0.7)	(0.6,0.7)	(0.9, 0.9)	(0.7,0.7)	(0.8,0.8)
S 3: Model change	(0.6,0.6)	(0.6,0.9)	(0.8,0.8)	(0.7,0.7)	(0.9,0.9)	(0.7,0.8)	(0.9,1)	(0.6,0.6)	(0.7,0.7)	(1,1)	(0.8,0.8)	(0.6,0.6)
S 4: Instinct Manipulation	(0.8,0.7)	(0.8,0.7)	(0.6,0.7)	(0.7,0.7)	(0.8,0.8)	(0.8,0.7)	(0.8,0.9)	(0.8,0.7)	(0.7,0.7)	(0.9,0.8)	(0.7,0.7)	(0.7,0.7)
S 5: Control combination	(0.8,0.5)	(0.7,0.8)	(0.5,0.6)	(0.8,0.7)	(0.9,0.9)	(0.7,0.7)	(1,0.9)	(0.7,0.7)	(0.7,0.8)	(0.9,0.9)	(0.8,0.9)	(0.7,0.6)
S 6: Material change	(0.7,0.8)	(0.8,0.6)	(0.5,0.5)	(0.7,0.7)	(0.9,0.9)	(0.7,0.7)	(0.9,0.9)	(0.8,0.8)	(0.9,0.8)	(0.9 08)	(0.7,0.5)	(0.7,0.7)

The results in Table 6 establish the user's telephone of performance matrix. Fuzzy sets are adapted in the strategy of business administration. Take telephones for an example, there are creative designs to choose in the establishment of production, all of which point to the division in Humanized interface, User standpoint, Model change, Instinct manipulation, Control combination, Material change, and etc.

Hence, according to the criteria quantification, it chooses the innovative plan as the optimal plan. It is optimal production. Considering the elements of price, benefit, and usage, it has more chances to choose the most appropriate plan. Therefore, in the actual design process, this study adapts the membership functions in Fuzzy Theory for searching the relevance between each feature and obtains the best result in quantification, show in Table 7.

TABLE 7: CALCULATING TELEPHONE SYNTHETIC UTILITIES

Evaluation Strategy	A11	A12	A13	A14	B11	B12	B13	B14	C11	C12	C13	C14	Mean
S1: Humanized Interface	0.8	0.8	0.7	0.8	0.9	0.6	0.9	0.6	0.5	09	0.8	0.7	0.7
S 2: User standpoint	0.8	0.9	0.8	0.8	1	0.6	0.8	0.7	0.6	0.9	0.7	0.8	0.8
S 3: Model change	0.6	0.9	0.8	0.7	0.9	0.8	0.9	0.6	0.7	1	0.8	0.6	0.77
S 4: Instinct Manipulation	0.8	0.8	0.7	0.7	0.8	0.8	09	0.8	0.7	0.9	0.7	0.7	0.78
S 5: Control Combination	0.8	0.8	0.6	0.8	0.9	0.7	1	0.7	0.8	0.9	0.9	0.7	0.8
S 6: Material													

3.8 CREATE OPTIMAL VALUES

According to Table 7, calculating telephone synthetic utilities results, Fuzzy synthetic utilities to innovative product design, and telephone values strategies, the strategy establishes good collecting telephone values of criteria. This is the best strategy when telephone customer and enterprise would like to engage in Mode 1 Market activities: Intelligence (A11)4.6, Brand A (12)5.0, Mode 2 User's custom: Price B (11)5.4, Function B (13)5.4, and Mode 3 Product innovative development: Style C (12)5.5 and Esthetics C (13)4.6, if the criteria are substitutive and independent, show in Figure 6.

FIG. 6: INNOVATIVE TELEPHONE MEASUREMENTS

INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT 32

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

http://ijrcm.org.in/
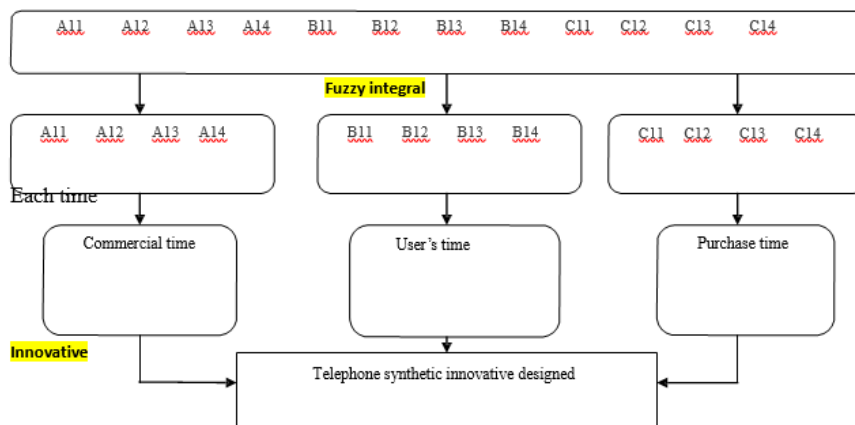
4. CASE STUDIES 2: PRODUCT DECISION MAKING SYSTEM

4.1 PRODUCT OBJECTIVE

According to Figure 3, the product design model is adapted for stimulating the proper solution to satisfy consumers with various points of views. However, multi decision making theory would be widely adapted in the long term, uncertain environment. With this strategy, the decision maker can realize the optimal mode of the solutions to problems. So the designer must realize and analyze the features of product before making design drawing, including striking a balance between the relationship of cost and user satisfaction, which is highly emphasized in this research.

4.2 ACTIVITY MODES

According to the telephone industry market and the coming Innovative management trend, the competition in the innovative telephone market will be for sure in the future. This activity mode includes product design position and market strategy, product management, creation of R&D value, design of organization structure of R&D, performance management and development mechanism. So the decision maker must set the industry goal and strategy to reflect market competition.

4.3 EVALUATIVE CRITERIA

Through using 60 descriptions and data from the user questionnaire survey form, in order to analyze innovative designed telephone, the product market can be divided into Market activities: value chain(A1), wise financial management(A2), product quality(A3), and research & development(A4); for User's custom: product management(B1), customized service(B2), marketing(B3); and for Product innovative development: R&D structure technique(C1), service quality(C2), management model(C3), and market environment(C4).

Telephone enterprise management ranks into 5 points. Which include: not important for 1 point, normal for 2 points, important for 3 points, and very important for 4 points. Then the result reveals that important and very important are optimal in innovative designed telephone, show in Table 8.

TABLE 8: INNOVATIVE DESIGNED MANAGEMENT

Innovative designed management

Item	Market activities (A1~A4)				User's custom (B1~B3)			Innovative development: (C1~C4)				Total
	A1	A2	A3	A4	B1	B2	B3	C1	C2	C3	C4	
Not important	4	0	0	0	0	4	4	4	0	4	0	20
Normal	18	6	9	6	54	0	9	18	45	9	12	340
Important	48	76	80	88	72	80	76	76	60	76	96	2268
Very important	25	45	35	30	50	40	30	15	50	30	15	1460
Sum	284	420	480	396	524	404	370	242	410	370	372	4088
Average	71	105	120	99	131	101	92.5	60.5	102.5	92.5	93	1068

The combination of Innovative strategy management of designed telephone for Market activities: Product quality (A3), User's custom: Product management (B1) and Product innovative development: Service quality (C2) gets the optimal innovative designed management in product design.

4.4 INNOVATIVE STRATEGY

Create product optimal efficiency, according to Table 7 and 8, the evaluation of products requires the intent combination of design techniques and user's, complete understanding of industry dynamic, application of management of innovative designed telephone management to users, integration of the interior and exterior resource, and establishment of organization construction. Therefore, it is necessary to create optimal product and customer value during enterprise transformation, show in Figure 7.

FIG. 7: INNOVATIVE STRATEGY
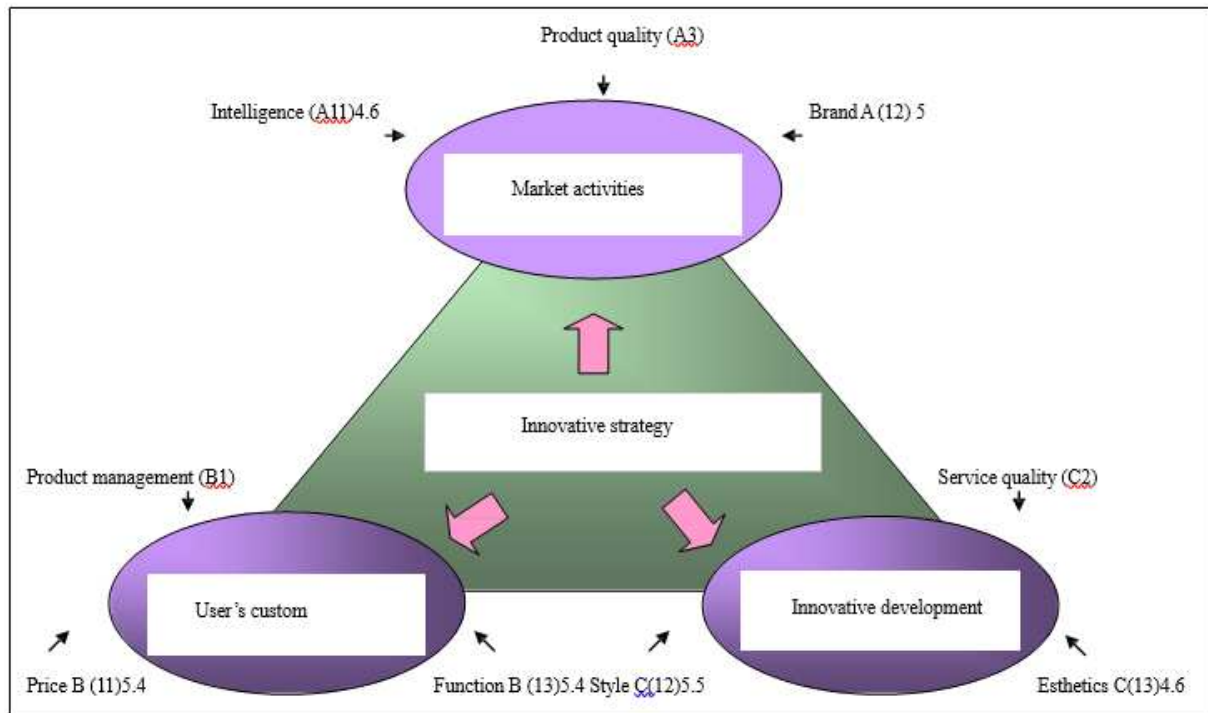
5. DISCUSSION

As discussed, with the change of consumer's usage, the design trend of innovative designed telephone s changes as well. Hence, the newly touch screen technologies have shown up. In the present study, we wish to improve the human-computer interaction benefit from the innovative screen. Therefore, how to explore the potential function demand of consumers providing innovative solutions and integrate the systems has become the challenge of designers.

In Figure 3, Hierarchical system in innovative designed telephone, discusses the confirmation of demand items first by the method of evolution of innovative designed telephone, including making the demand items of users, collecting the demand widely, selecting the demand items, categorizing the demand item, and etc. Depending on these procedures, this study successfully creates the design value of production through technological innovation and creation of competitive advantages in strategy. Then the researchers observed the customer demands and propose the solution. Meanwhile, this study also applied diversity analysis to provide optimized efficiency by initiation of product efficiency and value.

The results of Figure 5, innovative telephone synthetic innovative measurements, had shown telephone values of Fuzzy performance score with respect to criteria. This study explains that why the evolution of innovative designed telephone becomes the highest amongst the satisfaction of consumers. Known that the priority is the price and the second is the function.

In Table 4, the preference of product consumers has shown the subject used at least four expression modes through deep analysis to understand the crucial customer demand of innovative telephone. Then with the relative analysis of combination of exterior demand and interior quality production, the key and imply the variables were controlled to improve the quality to these crucial points, like web phone, which has been highly emphasized in its vocal quality and delicate simple style.

Therefore, in Figure 6 and Figure 7, the research of innovative design telephone is in Fuzzy field in the beginning. MCDM system is mainly applied in using strategy to make product design and in setting the product standard. First, we systematically transform customer demand into product feature, and then expand to every part, and to plan the production process, controlling the manage points in each stage. Hence the designer can be suitable to customer demand and can be promoted with the optimal product design.

6. CONCLUSION

Taking the case study of innovative designed telephone, this study has adapted the quantification solution like Fuzzy Theory, Hierarchical Analytical Process, MCDM theory, and product competition. Also, we emphasize customer demand to solve the problem, to design the optimal solution, to create the diversity to competitors, and to pursue the max sum.

Since this is a theoretical study, the results cannot be applied directly in the field of practical product design. However, in studies, the results of the present study are expected to provide a useful foundation with which to develop practical tools for innovative design in telephone form. In the design process of innovative designed telephone, some problems wait to be solved. And we must create innovative value, and get out of the dilemma, and to promote the strategy of new development of enterprise. With the promising thinking of wise financial management and customized management, we can promote ourselves by the creative ability through the process in the market, programming, and marketing, explore, and design, and make value chain become the most valuable factor in the design.

REFERENCES

1. Carlos Rommero, A general structure of achievement functions for a goal programming model. European Journal of Operation Research 153 (2004), 675-686.
2. Hirotaka Nakayma, Yun Yeboon, Asada Takeshi, Yoon Min, MOP/GP models for machine learning, European Journal of Operation Research 166 (2005), 756-768.
3. Hu Yi-chung, Chen Ruey-Shun, Tzeng Gwo-Hshiung, Jing Chiu-Yu, Acquisition of Compound Skills and Learning Costs for Expanding Competence Sets, Computers and Mathematics with Applications 46 (2003), 831-848.
4. Hsiao Shih-Wen, Liu Elim, A neurofuzzy-evolutionary approach for product design, Integrated Computer-Aided Engineering 11 (2004), 323-338.
5. Lai Hsin-His, Chang Yu-Ming, Chang Hua-Cheng, A robust design approach for enhancing the feeling quality of a product: a car profile case study, Industrial Erogonomics 35 (2005), 445-460.
6. Peter I. Simeonov, Hsiao Hongwei, Dotson Brian W., Ammons Douglas E., Control and perception of balance at elevated and sloped surfaces, General Information 45 (2003), 136
7. Tseng Fang-mei, Tzeng Gwo-Hshing, A Fuzzy seasonal ARIMA model for forecasting, Fuzzy Sets and Systems 126 (2002), 367–376.
8. Yu Rachung, Tzeng Gwo-Hshiung, A soft computing method for multi-criteria decision making with dependence and feedback, Applied Mathematics and Computation, (2006)

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Commerce, Economics & Management (IJRCM) acknowledges & appreciates your efforts in showing interest in our present issue under your kind perusal.

I would like to request you to supply your critical comments and suggestions about the material published in this issue as well as, on the journal as a whole, on our e-mail **infoijrcm@gmail.com** for further improvements in the interest of research.

If you have any queries, please feel free to contact us on our e-mail **infoijrcm@gmail.com**.

I am sure that your feedback and deliberations would make future issues better – a result of our joint effort.

Looking forward to an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-
Co-ordinator

DISCLAIMER

The information and opinions presented in the Journal reflect the views of the authors and not of the Journal or its Editorial Board or the Publishers/Editors. Publication does not constitute endorsement by the journal. Neither the Journal nor its publishers/Editors/Editorial Board nor anyone else involved in creating, producing or delivering the journal or the materials contained therein, assumes any liability or responsibility for the accuracy, completeness, or usefulness of any information provided in the journal, nor shall they be liable for any direct, indirect, incidental, special, consequential or punitive damages arising out of the use of information/material contained in the journal. The journal, neither its publishers/Editors/ Editorial Board, nor any other party involved in the preparation of material contained in the journal represents or warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such material. Readers are encouraged to confirm the information contained herein with other sources. The responsibility of the contents and the opinions expressed in this journal are exclusively of the author (s) concerned.

ABOUT THE JOURNAL

In this age of Commerce, Economics, Computer, I.T. & Management and cut throat competition, a group of intellectuals felt the need to have some platform, where young and budding managers and academicians could express their views and discuss the problems among their peers. This journal was conceived with this noble intention in view. This journal has been introduced to give an opportunity for expressing refined and innovative ideas in this field. It is our humble endeavour to provide a springboard to the upcoming specialists and give a chance to know about the latest in the sphere of research and knowledge. We have taken a small step and we hope that with the active co-operation of like-minded scholars, we shall be able to serve the society with our humble efforts.

Our Other Journals