Proceedings of

THE 3RD INDONESIA INTERNATIONAL CONFERENCE ON INNOVATION, ENTREPRENEURSHIP, & SMALL BUSINESS

IICIES 2011

July 26–28, 2011
Bandung, Indonesia

Creative and Cultural Entrepreneurship in the New Era

Editors
Dohar Bob M. Situmorang, Dwi Larso

Associate Editors
Isti Raafaldini Mirzanti, Salfitrie R. Maryunani, Sonny Rustiadi

Organized by:

CIEL
Center for Innovation, Entrepreneurship, & Leadership

SBM ITB
School of Business & Management
Institut Teknologi Bandung

IICIES

Proceedings of the Indonesia International Conference on Innovation, Entrepreneurship, and Small Business "Creative and Cultural Entrepreneurship in the New Era"
Oleh: Center for Innovation, Entrepreneurship, & Leadership, School of Business and Management ITB

Penerbit: CIEL SBM-ITB
Gedung SBM-ITB
Jl. Ganesa 10, Bandung
Telp. 022-2531923 Ext. 313
Fax 022-2504249

Disain sampul: Dini Aprilia Murdeani
Tata letak: Dohar Bob M. Situmorang & Isti Raafaldini Mirzanti

ISBN: 978-979-19081-3-9

The Indonesia International Conference on Innovation, Entrepreneurship, and Small Business

Bandung Indonesia
July 26-28, 2011

Conference Chair

Dwi Larso, Ph.D.

Scientific Council

Dwi Larso, Ph.D.
Bandung Institute of Technology, Indonesia

Prof. Togar M. Simatupang
Bandung Institute of Technology, Indonesia

Prof. Sudarso Kaderi Wiryono
Bandung Institute of Technology, Indonesia

Prof. Nawaz Sharif
John Hopkins University, USA

Prof. Gerald Lidstone
Goldsmiths, University of London, UK

Prof. Howard Frederick
Deakin University, Australia

Russell Toth, Ph.D.
University of Sydney

Advisory Council

Prof. Akhmaloka
Rector of ITB

Prof. Sudarso Kaderi Wiryono
Dean of SBM – ITB

Prof. Nawaz Sharif
John Hopkins University, USA

Prof. Gerald Lidstone
Director of ICCE, Goldsmiths, University of London, UK

Prof. Howard Frederick
Professor of Entrepreneurship Education, Deakin University, Australia

Preface

Dear IICIES 2011 Participants,
Welcome to the 3rd Annual IICIES Conference! Welcome to Bandung, Indonesia!

In a constantly evolving world and today's challenging economic climate, leadership through innovation and creativity are no longer optional, but essential. The growth of small businesses through innovation and the growing number of entrepreneurs are critical in gaining prosperity of a society. Indonesia, with a very limited number of growing entrepreneurs and a very large number of not-growing small businesses, is in poor shape in shaping its prosperity. It must be stopped and solved! Without the ability to take risks, innovation and progress cannot happen.

This year the theme of the conference is creative industry. Creative industries are becoming increasingly important components of modern post-industrial knowledge-based economies. Not only are they thought to account for higher than average growth and job creation, they are also vehicles of cultural identity that play an important role in fostering cultural diversity. During the last decade a number of governments around the world have recognized this fact and started to develop specific policies to promote them.

The Indonesia International Conference on Innovation, Entrepreneurship, and Small Business (IICIES) was initiated by the Center for Innovation, Entrepreneurship, and Leadership (CIEL), the School of Business and Management (SBM) at Institut Teknologi Bandung (ITB) back in 2009. Throughout the years, we constantly challenge ourselves to learn, study, and create local knowledge with global mindset to provide some lights in the development of new entrepreneurs and small businesses. This Conference provides a venue for Indonesian scholars and a network with international experts to collaborate. Programs in the Conference include Workshop, *Mengembang Layar* (a New Business Expo), Master & Doctoral Consortium, Gala Dinner, Seminar, and Parallel Session.

This 3rd IICIES has attracted more than 300 abstract submissions and about 150 reviewed and invited papers will be presented with the topics ranging from entrepreneurship theory to creativity and innovation, to entrepreneurship education, from social entrepreneurship to corporate entrepreneurship, from small /business to family business, to growing business. Authors come from various institutions in Indonesia and from several other countries. At least 250 researchers and participants from many universities and several countries are attending to this Conference.

In this occasion, I am honored to thank all contributors to the Conference including all Authors and Reviewers, all Key Speakers and Program Facilitators, Participants and Prominent Guests, all Sponsors Including Academic Institutions, Small-to-Large Businesses, Governmental Institutions, and Communities. Also, I have been blessed to work with a dedicated Organizing Committee. Thank you.

Theres an old saying, "*Cling to your imperfections, they are what make you unique*." Mistakes are a part of being human, and we do apologize for any imperfections and inconveniences that may happen before, during, and after the conference. I hope all of you will enjoy the Conference, look forward to hearing your sharing and seeing Indonesia in a better place: entrepreneurial and prosperous!

Dwi Larso, Ph.D.
Conference Chair

Outline

Table of Contents

Feasibility Study for Alternatives Strategy to Maintain Product Quality (Case Study: Craftsmen Kid T-Shirt–Bekasi Barat, Indonesia)

Rida Zuraida[1], Yulius Rico Setiawan[1], Abdullah Ramdhani[2]
[1]Industrial Engineering Department, Bina Nusantara University, Jakarta, Indonesia;
[2]Faculty of Economy, Garut University, Garut, Indonesia

Abstract

One of kid T-shirt small business at Bekasi uses marketed T-shirt as raw material because the capital is limited and the small of salesvolume. But since the T-shirt is come from 4 (four) suppliers with different size and fabric, the craftsman have difficulties to maintain the quality of product. This research conducted to see which alternative is best1) keep using marketed T-shirt, 2) advance business by produce its own T-shirt that suitable with the size and fabric has preferred, or 3) outsourcing the production the T-shirt with standardized kids' size. To achieve the objective, four brands marketed T-shirt has compared to anthropometric kids data. Consumer preferences also collected to see which fabric consumer prefers. Anthropometric kids' data use is 3-6 years kids andconsumer preference for fabric was collected from kids' parent. Based on them, one brand has chosen if craftsman keep using marketed T-shirt (alternative 1). After collecting information about cost required for alternative 2 and 3, all alternative was compared. And the result are: for existing salesvolume, alternatives 1 (one) is the best. To use two other alternatives they have to arrange marketing strategy that can boost their sales.

1. Introduction

1.1 Background

Entry barrier and exit barrier for someone to establish business in T-shirt is become lower than before. It is easier now to be part of the industry, because in every part of process there are some companies provide the material (raw material or work in process material). Its mean, to starting the business, the company doesn't have to make T-shirt from 'cotton thread' into T-shirt. Someone can simply buy marketed T-shirt and made it as it own produced by add the label, the pictures, etc.

In Bekasi Barat, there are 2 craftsmen who have small T-shirt business for kids since 2009 or 3 years ago. The differentiation from other similar products is the T-shirt accessorized with kid's name and some icons using flannel fabric. It made by hand or machine depends on the fabric or material use as accessories. The craftsmen are using marketed T-shirt as raw material, because to produce their own T-shirt, the capital needed is not affordable by their sales volume.

Right now, they are using 4 different brands, because each brand provide different size or and color. For example, brand A only has Small to Large size which are suitable for 3-6 years old kid but it provide more color than other brand, the size of brand B are very small to XL size which is says for 1.5-12 years old kid, brand C only provide white T-shirt for 1-3 years old kids but the length usually shorter than others, and brand D provide T-shirt for 1-3 years old with 4 colors.

The craftsmen are using all this different brands to meet the customer order. But, because of it, they have difficulties in maintaining product quality, since the fabric for each brand is not really similar.

To improve quality product, there are 3 (three) alternatives they consider right now. First: craftsmen keep using the marketed T-shirt but only use the most economical and suitable marketed T-shirt to improve and maintain product quality, second: produce own T-shirt, third: outsource T-shirt production to third party. Only one alternative they will approve for now.

1.2 Study Purposes

This study is trying to analyze the economic condition and find the best alternative for the craftsmen based on their sales volume and expected sales volume in next 2 years. To fulfill the study purposes, data anthropometric, fabric material preferred by customer, capital needed for each alternative, also will be use.

1.3 Method

Analytical Hierarchy Process (AHP) is use to select best alternative among 3 alternatives and use to select suitable and economical T-shirt supplier should be select by the craftsman one out of four brand.

Brand selection process is done based on customer opinion on preferred fabric, size available, T-shirt size compared to data from Standar Nasional Indonesia (SNI) for kids clothes, available color, convenience purchasing process, and price.

Selection of strategy is done based on sales, cots, and revenue projection and time save in producing product. A projection sale defines by time series forecasting method based on existing sales condition.

2. Theory

Analytical hierarchy process (AHP) is used widely as a tool in decision-making analysis such as for weapon selection (Dağdeviren, Yavuz, & Kılınç, 2009), supplier selection (Tam & Tummala, 2001; Yang & Chen, 2006). The AHP modeling process involves four phases: namely, structuring the decision problem, measurement and data collection, determination of normalized weights and synthesis finding solution to the problem. (Tummala & Wan, 1994)

Other methods: linear model, total cost of ownership model, and other mathematical model also have been used widely (Azadeh & Alem, 2010; Dağdeviren, Yavuz, & Kılınç, 2009; Yang & Chen, 2006). This tool also used by combining it with other methods or tools, such as fuzzy, grey relational analysis (Yang & Chen, 2006)

Decision making itself can establish after problem analysis is done. Once it done, objective has to be established and alternatives action must be developed and the alternatives can be evaluated by various techniques. Reliable supplier enable manufacturer to reduce inventory cost and improve product quality and now day's supplier selection become more important than before (Yang & Chen, 2006; Tam & Tummala, 2001). Selection alternatives could be a multi-criterion problem, which includes both qualitative and quantitative factors. And the relationship between a company and its supplier has always been critical and companies generally establish a set for evaluation criteria to be used to compare potential sources (Yang & Chen, 2006).

Feasibility study for alternative selection involves financial criteria (Becker, Parsons, Kolodinsky, & Matiru, 2007, Kauffmann, Tolga, & Kahraman, 2004; Reichel, 1998), and or technical criteria (Hessami, Campbell, & Sanguinetti, 2011) to assess the alternatives. And in this study, economic or financial criteria are internal rate of return (IRR), and breakeven point analysis (BEP) to help analysis the condition of alternatives.

This article is combined AHP to create decision making model and financial concepts as feasibility study tools. The result is best alternative for craftsmen and on what condition other alternatives can be adopted.

3. Design, Model, and Implementation

This study proposes a selection of 3 (three) alternatives business strategy to maintain and improve product quality; and feasibility study among them based on breakeven point and internal rate of return. Next Figure 1 shows how the study is designed.

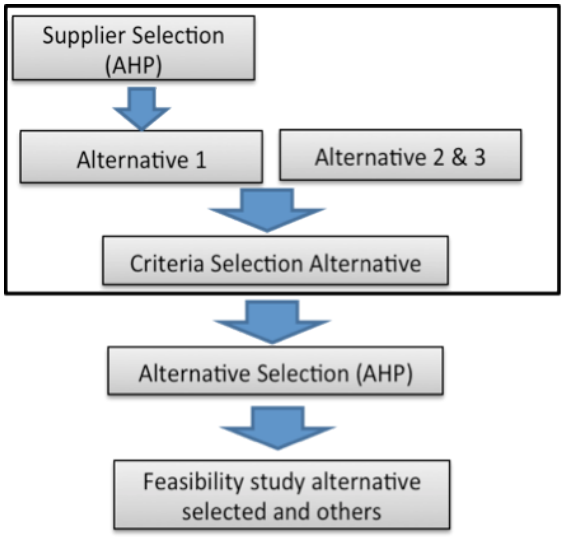

Figure 1. Research Flowchart

For alternative selection and brand selection in alternative 1, analytical hierarchy process is applied.

The selection criteria in brand selection are: available size, color, fit to SNI data, price, fabric used, and convenience to access the supplier.

The criteria in alternative strategy selection are a) capital needed, b) time saves,

c) design, fabric, and T-shirt size, d) human resources needed.

The feasibility of chosen alternative is measured based on cost and revenue projection. The feasibility of other alternatives is also calculated to see in what condition the other alternatives can be comply.

Figure 2 shows the criteria for supplier selection of marketed T-shirt as mention above.

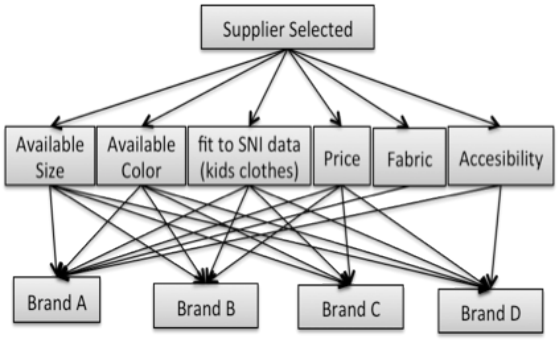

Figure 2. Criteria and Alternative T-shirt Brand

After building the AHP hierarchy, the next phase is the measurement and data collection, which involves forming a team of evaluators (craftsmen and crew), assigning pair wise comparisons to criteria used in the AHP hierarchy. The nine-point scale as suggested by Saaty (1980) is used to assign pair-wise comparisons of all elements in each level of the hierarchy.

Hierarchy on selection alternative, is shows at Figure 3:

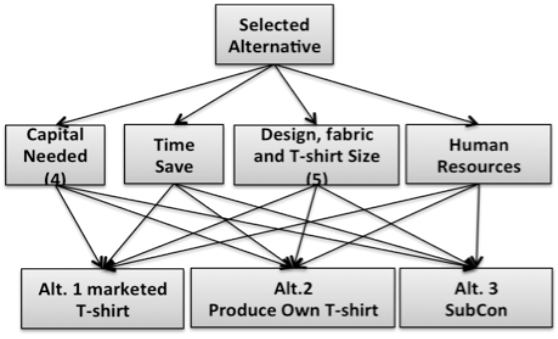

Figure 3. Criteria and Alternative Strategy

To select brand and alternative strategy, normalized priority weights for each criteria of the AHP hierarchy is computed, and the next phase is synthesized the solution.

4. Research Result and Discussion

4.1 Brand Selection

Before go to alternative strategy selection, at alternative 1—brand selection need to conduct. For this purpose, the condition of craftsmen business is collected and the result is summarized at Table 1.

Table 1. Collection data Result for Brand Selection

Criteria	Brand A	Brand B	Brand C	Brand D
1	4 years and up	1 years and up	1 years and up	1 years and up
2	close	close	close	not really close
3	all color	all color	all color	only 4 colors
4	high	medium	medium to high	high
5	high	medium	medium to high	medium to high
6	average	easy	average	hard

Note: 1) available size, 2) compare size to SNI's data 3) available color 4) price, 5) fabric used, 5) convenience of accessibility.

The condition is used as references by evaluation team to make judgment on matrix pair-wise, weight of each criterion; and the judgment on matrix pair-wise and rating of brands (Table2).

Table 2. Matrix Pair-wise and Weight of Brand Selection

Table 3. Matrix Pair-wise and the Rating for Brand Selection

Price Matrix					
A	1	0.14	0.33	2	0.14
B	7	1	3	0.14	0.46
C	3	0.33	1	3	0.28
D	2.00	0.14	0.33	1.00	0.12
Fabric Matrix					
A	1.00	5.00	3.00	3.00	0.53
B	0.14	1.00	1.00	0.33	0.10
C	0.33	3.00	1.00	0.33	0.17
D	0.33	3.00	1.00	1.00	0.20
Accessibility Matrix					
A	1.00	0.33	1.00	3.00	0.19
B	3.00	1.00	3.00	7.00	0.52
C	2.00	0.33	1.00	3.00	0.23
D	0.33	0.14	0.33	1.00	0.07
Total	6.33	1.81	5.33	14.00	1.00

Based on Table 2, criteria (2) or fit to SNI data size of kid's clothes is number 1 priority, and follow by available size (1) and price (4), available color (3), and convenience of accessibility (6).

Table 3 shows the result of judgment and the rating of each brand for the criteria. Next steps is needed is scoring to determine which brand should be select. And the scoring calculates as follows:

Score brand i = Σ weight criteria j ***x*** *rating brand i per criteria*

Next table shows that brand B is selected since the brand has a highest score among others. If the alternative 1 is chosen as best strategy to improve quality of product, craftsmen suggested using this brand.

Table 4. Brand Selection Result

		Rating			
Criteria	Weight	A	B	C	D
1	0.25	0.07	0.41	0.46	0.07
2	0.28	0.30	0.30	0.30	0.10
3	0.06	0.32	0.32	0.32	0.04
4	0.25	0.14	0.46	0.28	0.12
5	0.05	0.53	0.10	0.17	0.20
6	0.11	0.19	0.52	0.23	0.07
Score		0.20	0.38	0.32	0.09

4.2 Alternative Selection

Selection alternative strategy for craftsmen in improving quality and their business is main purpose of the study. As mention before there are 4 criteria used in judging each alternative.

Table 5 shows the cost condition for each alternative. Alternative 1 is a basis for other alternatives cost. For example, if raw material cost for alternative 1 is Rp 1,000,000 and alternative 2 is Rp 1,500,000 and then the data will shows raw material cost alternative.1 is 1, and alternative 2 will be 1.5/1 or 1.5.

Table 5. Cost Condition and Profit Projection

Description	Alt.1	Alt.2	Alt.3
Raw material Cost	1.00	0.85	1.13
Production cost	1.00	2.57	1.00
Sales Cost	1.00	1.00	1.00
Profit /year	1.00	0.82	0.87

Raw material cost for alternative 1 is including marketed T-shirt cost and its accessories. For alternative 2, the cost is a price of fabric, fabric accessories, and T-shirt accessories, and for alternative 3 the cost is a price for the outsource T-shirt and its accessories.

Production cost for alternative 1 and 3 is including a labor cost of finish product and a packing cost. For alternative 2, the cost is a labor cost for T-shirt production, a labor cost of finish product and a packing cost.

Sales cost is including transportation, rental space exhibition cost and sales clerk cost.

Table 6. Condition of the Alternatives

Alt.	Capital Need	Time Save	Design, fabric, and T shirt Size	HR need
1	Raw material Only, in small volume (more flexible)	medium	Given	No
2	Machine Investment and Raw Material	fast	Customized	yes
3	Raw material Only, in big volume (as minimum requirement production)	medium	Customized	No

Table 6 is a conclusion of condition for each alternative, based on financial calculation and discussion with team evaluator (craftsmen

and crews). The condition is used as references by team evaluator to make judgment on matrix pair-wise and priority for alternative strategy selection.

After summarizing the opinion of alternative condition, team evaluator gave the judgment to determine the weight of criteria decision (capital needed; time save; design, fabric, and T-shirt size; human resources needed). Judgment result on matrix pair-wise and weight of each criteria shows as follow:

Table 7. Matrix Pair-wise and Criteria Weight for Alternative Selection

Criteria	Capital N	TS	Dsg, F, Size	HR	Weight
Capital Needed	1.00	5.00	0.33	3.00	0.23
Time Save	0.20	1.00	2.00	4.00	0.18
Design, fabric, ar	3.00	2.00	1.00	4.00	0.32
HR	0.33	4.00	4	1.00	0.26
Total	4.53	12.00	7.33	12.00	1.00

Capital needed is a cost that craftsmen should give up for production and investment if any to execute the alternative. Time save is how the alternative can be effective to provide raw material (T-shirt) for production.

Design, fabric and T-shirt size refers to flexibility the alternative to the craftsmen need on that area.

Sales volume projection needed refers to breakeven point needed based on sales projection and price of sales.

Human resources refers to human resources needed to execute the alternative, whether the HR is easy to find or hard to find, skilled or unskilled one.

After define the weight, the priority of the criteria is available, calculating the rating for each alternative can be done. Next table shows the result.

Table 8. Matrix Pair-wise and Rating for Alternative Selection

Capital Needed	Alt.1	Alt.2	Alt.3	Rating
Alt.1	1.00	7.00	5.00	0.72
Alt.2	0.14	1.00	0.33	0.08
Alt.3	0.20	3.00	1.00	0.19
	1.34	11.00	6.33	1.00
Time Save				
Alt.1	1.00	0.20	0.33	0.11
Alt.2	5.00	1.00	3.00	0.63
Alt.3	3.00	0.33	1.00	0.26
	9.00	1.53	4.33	1.00
Design, Fabric, and Size				
Alt.1	1.00	0.33	0.33	0.14
Alt.2	3.00	1.00	3.00	0.57
Alt.3	3.00	0.33	1.00	0.29
	7.00	1.67	4.33	1.00
HR Needed				
Alt.1	1.00	7.00	1.00	0.49
Alt.2	0.14	1.00	0.20	0.08
Alt.3	1.00	5.00	1.00	0.44
	2.14	13.00	2.20	1.00

Based on result from previous steps, next table shows that alternative 1 is selected as best alternative. Score alternative selection calculates as follows:

Score alternative i = Σ weight criteria j x rating alternative i per criteria

Table 9. Alternative Selection Result

Criteria	Weight	Rating Alt.1	Alt.2	Alt.3
Capital Needed	0.23	0.724	0.083	0.193
Time Save	0.18	0.106	0.633	0.260
Design, fabric, and T shirt Size	0.32	0.140	0.574	0.286
HR	0.26	0.487	0.078	0.435
Score		0.36	0.34	0.30

Based on the result, the craftsmen strongly suggested using marketed T-shirt as raw material of production, and according to previous step, the supplier that craftsmen should use is supplier who provides brand B.

4.3 Feasibility Study

Since capital needed for alternative 1 is only for raw material and basically this cost is a variable cost, break-even point simply reaches when the sales covers production cost and sales cost.

At alternative 2, craftsmen should buy some machines to run production; therefore break-even point will reach after the sales cover investment cost, production cost, and sales cost.

At alternative 3, there is minimum order for outsource of T-shirt, so the break-even point should consider the cost.

Next table shows the net present value (NPV), internal rate of return (IRR), and breakeven point. Breakeven point at alternative

2 can be reach if the sales 1.83 times of existing sales rate, and for alternative 3 the sales 1.76 times of existing sales rate.

Table 10. NPV, IRR, and BEP of Alternatives

Description	Alt.1	Alt.2	Alt.3
NPV Ratio	1	(0.068)	0.627
IRR	33%	1%	16%
BEP (unit)	914	1,677	1,613

4.4 Discussion

Even the alternative 2 or 3 is not selected, but it still interesting to adopt by craftsmen in the future. It will help them to build the brand and sustain their business, because the alternatives will allow the craftsmen to determine the design, fabric, and T-shirt size.

Adopting any of the alternatives will need further study on understanding consumer needed and designing marketing strategy.

5. Conclusion

The study shows that craftsmen for time being are suggested to continue their production strategy or still use marketed T-shirt, and the best brand is brand B.

Feasibility study result for alternative 1 give the positive NPV in forth months. For alternative 2, NPV still negative after 12 months and positive value reach after 14 months. Alternative 3 reach positive NPV after 6 months.

Strategy alternative selection is also support by IRR value for alternatives 1, which is the highest among others.

In the future, if the craftsmen adopt others strategy, they have to consider to change their marketing strategy and pricing strategy to push their sales rate.

References

Azadeh, A. & S. Alem, (2010), "A Flexible Deterministic, Stochastic and Fuzzy Data Envelopment Analysis", *Expert Systems with Applications*, pp. 7438-7448.

Becker, K., R. Parsons, J. Kolodinsky, & G. Matiru, (2007), "A Cost and Returns Evaluation of Alternative Dairy Products to Determine Capital Investment and Operational Feasibility of a Small-Scale Dairy Processing Facility", *Journal of Dairy Science* 90(5): 2506-2516.

Dağdeviren, M., S. Yavuz, & N. Kılınç, (2009), "Weapon Selection Using the AHP and TOPSIS under Fuzzy Environment", *Expert Systems with Applications* 36(4): 8143-8151.

Hessami, M.-A., H. Campbell, & C. Sanguinetti, (2011), "A Feasibility Study of Hybrid Windpower Systems for Remote Communities", *Energy Policy* 39: 877-886.

Kauffmann, P., K. Tolga, & C. Kahraman, (2004), "Feasibility Next Term of TAMDAR: An Aircraft-based Weather Data Collection System", *Journal of Air Transport Management* 10(3): 207-215.

Reichel, A., (1998), "Neve-Ilan, Israel: A Site Selection", *Tourism Management* 19(2): 161-170.

Saaty, T., (1980), *The Analytic Hierarchy Process*, New York: McGraw-Hill .

Tam, M.C. & V.M. Tummala, (2001), "An Application of the AHP in Vendor Selection Next Term of a Telecommunications System", *Omega*, pp. 171-182.

Yang, C.-C. & B.-S., Chen, (2006), "Supplier Selection Using Combined Analytical Hierarchy Process and Grey Relational Analysis", *Journal of Manufacturing Technology* 17(7): 926-941.