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Contents lists available at ScienceDirect

Socio-Economic Planning Sciences

journal homepage: www.elsevier.com/locate/seps

Critical success factors of the nine challenges in Malaysia's vision 2020

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ARTICLE INFO

Article history:

Available online 13 July 2010

Keywords:

Vision 2020

Malaysia

Critical success factors

Analytic hierarchy process

ABSTRACT

By the year 2020, Malaysia aspires to become a fully developed nation. In order to realize this vision, formally termed 'Vision 2020', Malaysia must address nine strategic challenges identified by the government of former Prime Minister Tun Dr. Mahathir bin Mohamad. These challenges are: (1) Establishing a united Malaysian nation, (2) Creating a psychologically liberated, secure, and developed Malaysian society, (3) Developing a mature democratic society, (4) Forming a community that has high morale, ethics, and religious strength, (5) Establishing a mature, liberal and tolerant society, (6) Establishing a scientific and progressive society, (7) Establishing a fully caring society, (8) Ensuring an economically just society, and (9) Establishing a prosperous society. The present paper seeks to identify and rank the critical success factors of these nine challenges by applying the Analytic Hierarchy Process. A number of 'front-line' critical success factors are discussed at length. The paper also analyzes the impact of respondents' demography on the outcomes. The findings are expected to provide valuable guidelines to the Malaysian government in course of developing effective action plans to achieve Vision 2020.

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1. Introduction

Vision is a long-term objective that provides insight into the direction, a nation/organization wishes to move, just as an identified destination gives a direction to a journey. A well-defined vision offers both focus and direction to formulation of programmes that link current actions in seeking achievement of specific goals.

Malaysian Vision 2020 was unveiled by the former Prime Minister (PM) of Malaysia, Tun Dr. Mahathir bin Mohamad at the inaugural meeting of the Malaysian Business Council on 28 February 1991. The Malaysian cabinet approved the Vision unanimously and mandated for an immediate national conference, which took place in December, 1991. It has since formally become Malaysia's National Vision. To date, a number of books have been written and numerous seminars/exhibitions organized in efforts to operationalize the Vision in terms understandable and deliverable to the populace (Sarji [1], Yeoh [2], Sarji [3]).

The essence of this vision is to have Malaysia functioning as a fully developed nation¹ by the year 2020. The Vision 2020 statement is thus (Rahman [4], p. 271):

"By the year 2020, Malaysia is to be a united nation, with a confident Malaysian society, infused by strong moral and ethical values, living in a society that is democratic, liberal, caring, economically just and equitable, progressive and

¹ The term developed country is used to categorize countries with developed economies in which the tertiary and quaternary sectors of industry dominate. This level of economic development usually translates into a high per capita income and a high Human Development Index. World Bank defines high income countries as countries with per capita GNP of \$10,000 or more. Traditionally, Canada and the United States in North America, Japan in Asia, Australia and New Zealand in Oceania, and most countries in Northern Europe and Western Europe have been considered as developed countries. Despite their high per capita GNP, the GCC countries in the Middle East are generally not considered developed countries because their economies depend overwhelmingly on oil production and export.

Generally speaking, a nation is said to be developed if it has well-developed political, economic, physical, educational and infrastructural institutions in place and every citizen, irrespective of his/her class, sex, or birth enjoys the confidence to live his/her life by choice and not by imposition from any sector, provided such liberty is within the accepted moral norms of the society, without fear or inhibition of any kind or from any quarter. Developed countries have low level of illiteracy, poverty, infrastructural deficiencies, social imbalances, bureaucratic and political bottlenecks, etc and work in cohesion and unison in one voice and dictum and achieves as a result, the highest in the fields of science, and discoveries, at any given point of time and leads the field with highly developed systems in the area of law, justice and social retribution.

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prosperous, and in full possession of an economy that is competitive, dynamic, robust and resilient”.

At the first open National Seminar on Vision 2020 (henceforth referred to as V-2020, for brevity) in 1991, the then Deputy Prime Minister of Malaysia, Tun Abdul Ghafar Baba, stressed that Malaysia should be developed economically, as well as other key dimensions including politically, socially, spiritually, psychologically and culturally. As importantly, Malaysia should also endeavor to create a united, confident, socially just and politically stable society, in which everybody has a place, and takes pride in being a Malaysian². In short, V-2020 is designed to reflect the vision of a fully developed and industrialized Malaysia by the year 2020, in all dimensions.

Specific objectives of V-2020 are as follows:

- To have sufficient food and shelter with easy access to health and basic essentials
- To reduce the present level of poverty
- To remove the identification of race with major economic functions and to have a fair distribution with regard to the control, management and ownership of the modern economy
- To maintain annual population growth rate of 2.5%
- To double real GDP every ten years between 1990 and 2020 AD
- To have a balanced growth in all sectors namely: industry, agroforestry, energy, transport, tourism and communications, banking, that is technologically proficient, fully able to adapt, innovative, with a view to always moving to higher levels of technology

From the above, it is clear that the focus of V-2020 goes beyond the purely economic aspects of development by considering such aspects as social justice, quality of life, moral and ethical values, and work ethics (Kassim [6]).

To achieve the various objectives of V-2020, the former PM identified nine challenges and according to him, if these challenges are successfully addressed, then Malaysia will be able to realize V-2020. These challenges are supported and promulgated by other Malaysians including various ministers, by and large. Here are those nine challenges:

1. Establishing a united Malaysian nation with a sense of common and shared destiny. This should be a nation at peace with itself, territorially and ethnically integrated
2. Creating a psychologically liberated, secure, and developed society with faith and confidence in itself, robust enough to face all manners of diversity
3. Developing a mature democratic society, practicing a form of mature consensual, community-oriented democracy
4. Forming a community that has high morale, ethics, and religious strength
5. Establishing a mature, liberal and tolerant society wherein people of all colors and creeds are free to practice and profess their customs, cultures and religious beliefs and yet feeling that they belong to one nation
6. Establishing a scientific and progressive society, a society that is innovative and forward-looking, one that is not only a consumer of technology but also a contributor to the scientific and technological civilization of the future
7. Establishing a fully caring society and a caring culture, a social system in which the society will come before self and the

welfare of the people will revolve not around the state or the individual but around a strong and resilient family system

8. Ensuring an economically just society, a society in which there is a fair and equitable distribution of the wealth of the nation
9. Establishing a prosperous society, with an economy that is fully competitive, dynamic, robust, and resilient

It is not an easy job to address these challenges. Proper action plan must be taken to address these challenges. A number of action plans may need to be developed even for one challenge. The objectives of this paper are to identify the critical success factors (CSFs) to address the challenges and prioritize them using the Analytic Hierarchy Process (Saaty [7]). We also intend to identify the areas where the different ethnic groups agree and where they differ. The details are provided in the following sections.

2. Research methodology

Critical Success Factors (CSFs) pertaining to one challenge are those factors that must be implemented in order to successfully address the challenge. The CSFs of the nine challenges have been identified from the literature on V-2020 and interviewing a number of personalities who are well-aware about V-2020. The list of CSFs has been modified three times before we obtain the final list, as shown in Table 2. The number of CSFs of the nine challenges are: 7, 7, 6, 7, 6, 7, 6, 7, and 7, respectively. As mentioned above, we determined the priorities of these CSFs by the Analytic Hierarchy Process (AHP).

To proceed with the prioritization, we formed an AHP questionnaire that comprised the blank AHP pairwise comparison matrices and items on respondents' demographic information. Usually, survey data are collected using 1–5 point Likert scale. Respondents are quite familiar with this type of survey questionnaire and it is easy to use. However, AHP questionnaire is considerably different from this and it has been found that unless the researcher explains the AHP scale and the meaning of its various points to the respondents, they may find it difficult to use. To ensure reliability in collected data, we did not pass the questionnaires to the respondents for filling up by themselves, rather we administered the survey personally. We asked the respondents all the AHP pairwise comparison questions face-to-face and we entered the AHP 'strength of importance' in the blank pairwise comparison matrices. We obtained data from 52 respondents whose profiles are provided in Table 1. We could not make the sample size larger due to the very nature of the survey.

Malaysia is a country that consists of 13 states plus a federal territory and the nation comprises 3 major races: Malays, Chinese, and Indians. Statewise distribution of the sample respondents are shown in Fig. 1. Malaysia's racial composition is also reflective in the sample (see Table 1). All the respondents were interviewed either by the researcher or by the appointed AHP-knowledgeable Research Assistants.

Data collection time varied from person to person. Average time per person was found to be an hour. For some respondent, it took even 2 h to complete the exercise in filling up all the nine pairwise comparison matrices (PCMs). Expert Choice software (Saaty and Forman [8]) was used to compute the priorities of the CSFs from the PCMs. The details of the data and subsequent analysis are provided in the following section.

3. Data collection and analysis

3.1. Ranking of critical success factors

Altogether, we had been able to complete and compile 52 questionnaires. Since the survey was administered personally, all the

² Speech delivered by Tun Abdul Ghafar Baba at the opening ceremony of National Seminar Towards a Developed and Industrialized Society: Understanding of the Concepts, Implications and Challenges of Vision 2020, Kuala Lumpur, 5–7 December, 1991.

Table 1
Respondents' profile.

Demographic variable	Frequency	Per cent
Gender		
• Male	31	59.6
• Female	21	40.4
Race		
• Malay	32	61.5
• Chinese	7	13.5
• Indian	3	5.8
• Others	10	19.2
Age group		
• 20 years or below	0	0.00
• 21–30 years	15	28.8
• 31–40 years	22	42.3
• 41–50 years	11	21.2
• 51 years and above	4	7.7
Highest level of education		
• Certificate	3	5.7
• Professional	2	3.8
• Bachelors	8	15.4
• Masters	30	57.7
• Ph.D.	8	15.4
Marital status		
• Single	17	32.7
• Married	35	67.3
Type of employment		
• Public	23	44.2
• Private	16	30.8
• Self-employed	4	7.7
• Other	9	17.3

completed questionnaires are usable. A sample of the completed questionnaire has been provided in Exhibit 1 (PCMs only).

When multiple respondents take part in an AHP survey, we need to aggregate the individual responses. Condon et al [9] mentioned that in four different ways AHP group responses can be aggregated: consensus, vote of compromise, geometric mean of the individual judgments, and weighted arithmetic mean. The first three deal with the judgments of individuals while the last deal with the priorities derived from the judgments. In the present work, we have used geometric mean method to aggregate the group judgments. This is because geometric mean of group judgments is the mathematical equivalent of consensus if all the members are considered equal. Otherwise, one would use weighted geometric mean. Aczél and Saaty [10] showed that the only mathematically

valid way to synthesize reciprocal judgments preserving the reciprocal property is geometric mean. Exhibit 2 shows the pairwise comparison matrices that were obtained using the geometric means.

Instead of determining priorities from individual pairwise comparison matrices, Expert Choice software was used to calculate the priorities of the CSFs from the pairwise comparison matrices obtained using the geometric means. A sample screen of AHP software is shown in Fig. 2.

The priorities and the corresponding ranks of the CSFs are provided in Table 2.

It is to be noted that the respondents have differed in articulating their responses on the strengths of importance for the factors. Exhibit 3 shows the interval pairwise comparison matrices, where interval of a specific comparison is determined by taking the minimum and the maximum for all the responses pertaining to a specific judgment. In majority of the cases, the interval is (1/9,9), i.e., the length is 16 (measured ordinally) – the maximum possible difference in AHP scale. However, when we find the geometric means, the numbers appears significantly smaller. In fact, the maximum value is found to be 4.00 from amongst 171 comparisons. This means greater consistency in the judgments. The consistency ratios of all the nine PCMs are either 0.0 or 0.01 or 0.02.

It is to be noted that interval pairwise comparison matrices were formed by considering the extreme (minimum and maximum) judgments for every individual pairwise comparison. These matrices are not used to compute priorities, as it has already been done from the geometric mean pairwise comparison matrices, rather they show the extent of difference in the respondents' judgments. The wider the length of interval, the people differ more on the corresponding judgment. However, the conclusion on the difference of opinion should be made cautiously. This is because the end points of the intervals come from only two individuals, where as the majority of the respondents' responses may revolve around some particular value within the interval.

We single out the first rank holder CSF for every challenge and shown in the following:

- Challenge 1: Ensure that academic curricula promote racial integration
- Challenge 2: Government should be willing to listen to criticisms from the people and stand answerable to all queries

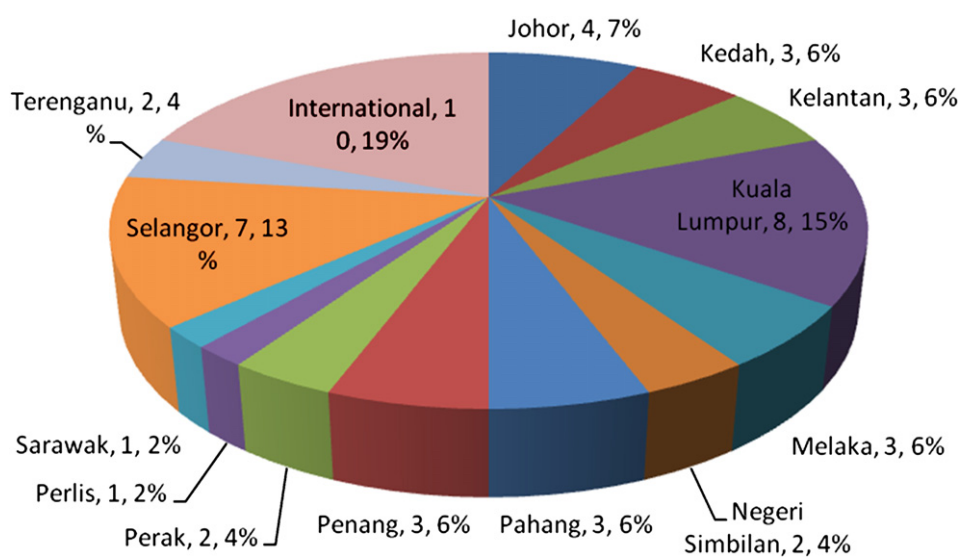


Fig. 1. Statewise statistics of the respondents.

Exhibit 1. A sample of completed AHP questionnaire.

	C ₁₁	C ₁₂	C ₁₃	C ₁₄	C ₁₅	C ₁₆	C ₁₇		C ₂₁	C ₂₂	C ₂₃	C ₂₄	C ₂₅	C ₂₆	C ₂₇
C ₁₁	1	5	3	1	1/3	3	1/5	C ₂₁	1	7	5	1/3	5	1/9	1
C ₁₂		1	1	1/3	1	5	1	C ₂₂		1	1	1/7	3	1/9	3
C ₁₃			1	1	1/5	3	1/5	C ₂₃			1	1/5	5	1/9	1/3
C ₁₄				1	1	5	1	C ₂₄				1	7	1/5	7
C ₁₅					1	7	1	C ₂₅					1	1/7	1/5
C ₁₆						1	1/7	C ₂₆						1	9
C ₁₇							1	C ₂₇							1
	C ₃₁	C ₃₂	C ₃₃	C ₃₄	C ₃₅	C ₃₆		C ₄₁	C ₄₂	C ₄₃	C ₄₄	C ₄₅	C ₄₆	C ₄₇	
C ₃₁	1	1	5	5	5	1	C ₄₁	1	1/7	1/5	1/7	1/7	1	1	
C ₃₂		1	7	7	7	3	C ₄₂		1	3	3	1	5	5	
C ₃₃			1	1/3	1/5	1/5	C ₄₃			1	1	1	5	5	
C ₃₄				1	1	1/7	C ₄₄				1	1/5	3	5	
C ₃₅					1	1/9	C ₄₅					1	7	7	
C ₃₆						1	C ₄₆						1	1	
							C ₄₇							1	
	C ₅₁	C ₅₂	C ₅₃	C ₅₄	C ₅₅	C ₅₆		C ₆₁	C ₆₂	C ₆₃	C ₆₄	C ₆₅	C ₆₆	C ₆₇	
C ₅₁	1	1	3	1/7	1/7	1/9	C ₆₁	1	1	1/7	1	1	1/3	1/5	
C ₅₂		1	5	1/5	1/5	1/9	C ₆₂		1	1/9	1	1	1	1/5	
C ₅₃			1	1	1/3	1/5	C ₆₃			1	9	9	9	5	
C ₅₄				1	1/7	1/7	C ₆₄				1	1	1	1/5	
C ₅₅					1	1/9	C ₆₅					1	1	1/7	
C ₅₆						1	C ₆₆						1	1/9	
							C ₆₇							1	
	C ₇₁	C ₇₂	C ₇₃	C ₇₄	C ₇₅	C ₇₆		C ₈₁	C ₈₂	C ₈₃	C ₈₄	C ₈₅	C ₈₆	C ₈₇	
C ₇₁	1	1	1/9	1	1	1	C ₈₁	1	8	5	1/3	1/5	1/7	1/3	
C ₇₂		1	1/9	1	1	1	C ₈₂		1	1	1/5	1/5	1/5	1	
C ₇₃			1	9	9	9	C ₈₃			1	1	1/5	1/5	1	
C ₇₄				1	1	1/5	C ₈₄				1	7	7	7	
C ₇₅					1	1/5	C ₈₅					1	1	1	
C ₇₆						1	C ₈₆						1	3	
							C ₈₇							1	
	C ₉₁	C ₉₂	C ₉₃	C ₉₁	C ₉₁	C ₉₁	C ₉₁	C ₉₁	C ₉₁	C ₉₁	C ₉₁	C ₉₁	C ₉₁		
C ₉₁	1	9	9	1	1	1	1	1	1	1/5	1	1	1		
C ₉₂		1	1	1/5	1/7	1/9	1/5	1/7	1/9	1/9	1/9	1/5	1/5		
C ₉₃			1	1/5	1/7	1/9	1/5	1/7	1/9	1/9	1/9	1/5	1/9		
C ₉₄				1	1/3	1/5	1	1/3	1/5	1/5	1/5	1	1		
C ₉₅					1	1/5	1	1	1/5	1/5	1/5	1/5	1/5		
C ₉₆						1			1	1	1	1	9		
C ₉₇													1		

- Challenge 3: People should have the power to change the government when it fails to perform
- Challenge 4: Eliminate corruption from all levels of administration
- Challenge 5: Have morally upright leaders in the government
- Challenge 6: Achieve technology mastery
- Challenge 7: Develop human capital
- Challenge 8: Facilitate the private sector to contribute significantly towards the nation's economic growth
- Challenge 9: Ensure that the public feel safe anywhere in the country

Apart from the above, few other CSFs also received considerable attention and deserves to be highlighted:

- Challenge 4: Enforce strict rules against unethical practices
- Challenge 5: Provide broad based education curriculum that includes spiritual, psychological, societal and career developments
- Challenge 6: Hire highly qualified and experienced personnel
- Challenge 6: Provide resources for R&D in scientific research, information technology and other potential fields for the future growth

- Challenge 7: Encourage all institutions, including the employers to promote family values
- Challenge 7: Implement comprehensive poverty eradication programs
- Challenge 8: Distribute government wealth justly
- Challenge 9: Ensure the operation of a fair judicial system at all levels in the country
- Challenge 9: Increase per capita income

3.2. Discussion on critical success factors

In the following, we discuss some of these front-line CSFs. A large number of citations are incorporated to support the factors.

3.2.1. Racial integration

Though priorities were not assigned to the nine challenges by the former PM, nevertheless he was in favor of assigning number one priority to the first challenge, namely establishing a united Malaysian nation. He said:

But it would be surprising if the first strategic challenge which I have mentioned the establishment of a united Malaysian nation is not likely to be the most fundamental, the most basic.

Exhibit 2. Pairwise comparison matrices comprising the geometric means of individual judgments.

	C ₁₁	C ₁₂	C ₁₃	C ₁₄	C ₁₅	C ₁₆	C ₁₇		C ₂₁	C ₂₂	C ₂₃	C ₂₄	C ₂₅	C ₂₆	C ₂₇
C ₁₁	1	2.61	1.14	0.64	0.68	0.64	0.87	C ₂₁	1	1.65	1.82	0.59	1.23	0.51	0.69
C ₁₂		1	0.74	0.57	0.78	0.64	0.67	C ₂₂		1	1.90	0.55	1.48	0.62	0.93
C ₁₃			1	0.80	0.71	0.64	0.66	C ₂₃			1	0.36	1.10	0.37	0.64
C ₁₄				1	1.57	0.71	0.88	C ₂₄				1	2.58	0.72	1.33
C ₁₅					1	0.85	0.67	C ₂₅					1	0.37	0.46
C ₁₆						1	1.12	C ₂₆						1	1.09
C ₁₇							1	C ₂₇							1
	C ₃₁	C ₃₂	C ₃₃	C ₃₄	C ₃₅	C ₃₆		C ₄₁	C ₄₂	C ₄₃	C ₄₄	C ₄₅	C ₄₆	C ₄₇	
C ₃₁	1	1.07	3.71	2.77	0.82	0.81	C ₄₁	1	1.40	0.99	0.55	0.27	0.62	1.04	
C ₃₂		1	3.35	2.28	1.01	1.91	C ₄₂		1	2.16	1.40	0.51	1.31	2.03	
C ₃₃			1	1.02	0.38	0.45	C ₄₃			1	0.68	0.29	1.07	1.21	
C ₃₄				1	0.40	0.50	C ₄₄				1	0.31	1.20	1.49	
C ₃₅					1	1.31	C ₄₅					1	3.03	3.30	
C ₃₆						1	C ₄₆						1	1.24	
							C ₄₇								1
	C ₅₁	C ₅₂	C ₅₃	C ₅₄	C ₅₅	C ₅₆		C ₆₁	C ₆₂	C ₆₃	C ₆₄	C ₆₅	C ₆₆	C ₆₇	
C ₅₁	1	0.83	2.54	1.04	0.73	0.35	C ₆₁	1	0.96	0.70	1.96	2.12	1.31	0.74	
C ₅₂		1	4.00	1.59	1.09	0.52	C ₆₂		1	1.06	2.40	2.74	1.74	0.78	
C ₅₃			1	0.42	0.34	0.24	C ₆₃			1	2.55	2.19	1.68	1.06	
C ₅₄				1	0.78	0.23	C ₆₄				1	1.15	0.61	0.44	
C ₅₅					1	0.35	C ₆₅					1	0.49	0.37	
C ₅₆						1	C ₆₆						1	0.54	
							C ₆₇								1
	C ₇₁	C ₇₂	C ₇₃	C ₇₄	C ₇₅	C ₇₆		C ₈₁	C ₈₂	C ₈₃	C ₈₄	C ₈₅	C ₈₆	C ₈₇	
C ₇₁	1	1.61	0.56	0.67	0.71	0.68	C ₈₁	1	1.01	1.28	1.37	0.98	0.58	1.29	
C ₇₂		1	0.54	0.81	0.64	0.60	C ₈₂		1	1.98	1.12	1.21	0.91	1.10	
C ₇₃			1	1.45	1.03	1.02	C ₈₃			1	1.18	0.62	0.50	0.86	
C ₇₄				1	0.83	0.87	C ₈₄				1	1.02	0.62	1.02	
C ₇₅					1	1.36	C ₈₅					1	1.03	0.96	
C ₇₆						1	C ₈₆						1	1.60	
							C ₈₇								1
	C ₉₁	C ₉₂	C ₉₃	C ₉₄	C ₉₅	C ₉₆	C ₉₇	C ₉₁	C ₉₁	C ₉₁	C ₉₁	C ₉₁	C ₉₁	C ₉₁	
C ₉₁	1	2.50	0.56	0.38	0.94	0.40	0.88								
C ₉₂		1	0.52	0.43	0.61	0.27	0.53								
C ₉₃			1	0.58	1.02	0.45	0.87								
C ₉₄				1	1.94	0.78	1.47								
C ₉₅					1	0.41	1.08								
C ₉₆						1	3.00								
C ₉₇							1								

The following two statements are also noteworthy:

- It is important to realize that the core thrust of Vision 2020 is the ultimate goal of national unity (Kassim [6]).
- The common citizen should display qualities such as competence, hard work, pursuit of excellence, thrift and thinking himself as being a Malaysian rather than a Malay, Indian or Chinese (Kuok [11]).

Malaysia's 27.73 million population (in 2008) comprises about 60 percent Malays. Chinese and Indians who began migrating to Malaysia in the early 19th Century make up 26 and 8 per cent, respectively. Racial unity is widely regarded as a prime requirement for achieving V-2020. Generally speaking, unity among various races in Malaysia is good and highly commendable. However, there are times, issues relating to race and ethnicity make headlines in national newspapers. These are largely due to the remarks (sometimes irresponsible) by certain political leaders belonging to one race about the other. This kinds of remarks do more harm than good in terms of maintaining racial harmony. In reference to unscrupulous politicians' unwanted race related statements, a prominent Malaysian social activist Lee Lam Thy said:

Their racial outbursts, from time to time, have certainly created more divisiveness instead of unity among the people. There should be no place for racial prejudices and stereotypes in the multi-racial society like ours.

He also mentioned that goodwill, harmony and unity cannot be achieved through legislation. Managing race relations must start with the individual. If there is goodwill, harmony and unity in a person's thoughts, emotions and actions it will be reflected in how he or she treated others.

Malaysian Deputy Prime Minister Najib Tun Razak (now Prime Minister) said (see Sennyah and Sharmini [12], p. 2):

Racial and religious differences, skin color and cultures should not be obstacles to unity, as, in principle, all races had the same aims and desires in life, which was to live in peace and happiness.

Najib also said (see Loh [13], p. 4):

If we want to raise issue, it should be done in a respectful manner so as not to hurt the feelings of others.

It requires a constant level of sensitivity and foresight to manage a multi-racial and multi-religious country like Malaysia,

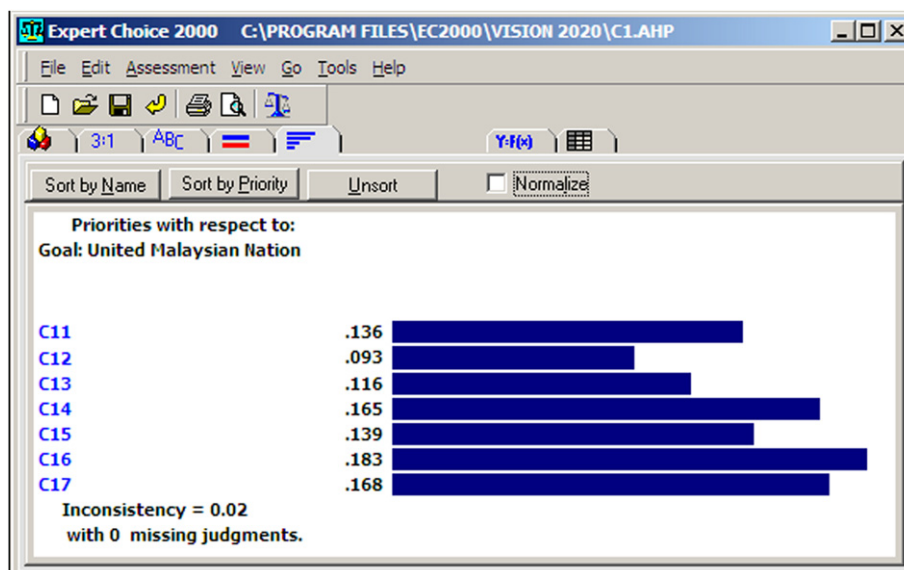


Fig. 2. A sample expert choice screen for computation of priorities.

particularly at the present time when racial polarization is visibly clear. The polarization begins right from school or college level. While surveying the level of racial integration among students in some Malaysian university, Ramachandran ([14], p. 13) noted:

The tables were full of students, but they sat in groups of the same race. You could hear snippets of conversation from all sides of the cafeteria in the language or dialect of the group occupying the table. There were also students studying and copying notes in groups at the cafeteria, but this was also done in groups of same race. There was not a single multi-racial group sitting together. Outside the cafeteria, students were seen walking together to class. Again, in groups of the same race.

The above observation is not a one-off case; it is common, observable day-to-day phenomenon. In view of this, many policy makers have underscored the importance of developing action plan of racial integration since the school life through revamped academic curricula.

It is worthwhile to cite the comment made by one of the survey respondents:

Once all the races in Malaysia can stand together and declare that no matter what comes on our way, we will defend each other and stand up as Malaysians, only then Malaysia can succeed.

3.2.2. Racial integration through revamped academic curricula

Respondents of this survey strongly felt that academic curricula can play a vital role in promoting national integration. At present, the curricula lacks ingredients of this integration and it is a common observation (as mentioned above) in Malaysian academic institutions that Malays get along with Malays, Chinese mix with others of their own race and Indian do things with Indians. Sopheer wrote ([15], p. 96):

Obviously much more will have to be done in our educational institutions, through the curriculum and extra-curricular activities in infusing the moral and ethical values of particular relevance to Vision 2020.

On the other hand, Abdullah said ([16], p. 323):

It is imperative that the contents of modern education at tertiary levels will have to be changed to include the various elements necessary to balance technology, social and natural sciences, engineering with ethics, morality and leadership training.

In reference to academic curricula, Royal Professor Aziz ([17], p. 349) said:

It is the fact that with the announcement of Vision 2020, Malaysia is confronted with a new map and it is expected to travel at a faster speed. Therefore it seems apposite to make a thorough reexamination of the whole system and to change the existing system into a new system with additions where necessary.

3.2.3. Broad based education policy

Abdullah [5] mentioned that the content of modern education at tertiary levels will have to be changed to include the various elements necessary to balance technology, social and natural sciences, engineering with ethics, morality and leadership training.

Dr. Chia Keng Boon, principal of National Secondary School at Ampangan, Seremban state mentions that from the very beginning the main aim of Malaysian educational policy was to achieve racial integration (see Sing et al [18]). In fact, this aim was articulated first time in Razak Report on education in Malaya in 1956. However, this objective is yet to be fully achieved as highlighted previously. Many people have blamed for this non-achievement to the present national school policy. At present, the national schools are predominantly enrolled by Malays, the major race, where as other two races, namely Chinese and Indians have their own schools runned by themselves. Therefore, racial mixing in the national schools is virtually non-existent. This contributes to the extreme polarization at the subsequent tertiary education level (Ramachandran [14]). Datuk Rafia Salim, the former Vice Chancellor of Universiti Malaya comments (reported in New Straits Times, August 30, 2007, p. 12):

I would like to have just one school system because different schools are divisive. A system that respects the beliefs, religions and customs of all Malaysians.

The same opinion has been echoed by the Prime Minister Abdullah Ahmad Badawi (now retired) in an interview with a staff reporter of New Straits Times on the Ninth Malaysian Plan (reported on April 1, 2006, p. 8):

Schools are an important place to nurture national unity and imbue the spirit of national integration. We must make an effort to ensure a good racial mix among students and teachers in national schools. Steps need to be taken to ensure that national schools become the choice of all races.

Table 2

Critical success factors, their priorities and ranks.

Challenge	Critical success factors	Weight	Rank
United Malaysian Nation (C ₁)	Recognize and meet the needs of all ethnic groups (C ₁₁)	0.136	5
	Provide merit-based rewards (C ₁₂)	0.093	7
	Give complete freedom to practice any religion (C ₁₃)	0.116	6
	Encourage active participation of all ethnic groups in governmental decisions (C ₁₄)	0.165	3
	Share ideas among different ethnic groups (C ₁₅)	0.139	4
	Ensure that academic curricula promote racial integration (C ₁₆)	0.183	1
	Give equal opportunities to all groups of people (C ₁₇)	0.168	2
Psychologically liberated society (C ₂)	Need to develop using internal resources, and be less dependent on resources from other nations (C ₂₁)	0.130	4
	Enhance dignity of labor by providing better facilities and living conditions to low skilled labor (C ₂₂)	0.123	5
	Avoid gender discrimination at work places as well as in schools and colleges (C ₂₃)	0.079	7
	Enhance laws and regulations that safeguard the rights of all the individuals (C ₂₄)	0.205	2
	Uphold press freedom (C ₂₅)	0.081	6
	Government should be willing to listen to criticisms from the people and stand answerable to all queries (C ₂₆)	0.221	1
	Increase literacy rate and enhance incentives for education (C ₂₇)	0.160	3
Democratic society (C ₃)	The government should have a sense of accountability towards the people (C ₃₁)	0.212	3
	People should have the power to change the government when it fails to perform (C ₃₂)	0.235	1
	Let the market forces decide on the investments to be made in different industries (C ₃₃)	0.074	6
	Free the Central Bank from government intervention (C ₃₄)	0.084	5
	Free the law courts from political intervention (C ₃₅)	0.221	2
	Encourage participation of all the ethnic groups in the parliament (C ₃₆)	0.174	4
Moral and ethical society (C ₄)	Instead of telling people ethics is good, tell them why and how (C ₄₁)	0.101	5
	Enforce strict rules against any unethical practices (C ₄₂)	0.152	2
	Companies should make proper disclosure of their accounts (C ₄₃)	0.094	6
	Audit firms should disclose any unethical practice (C ₄₄)	0.128	3
	Eliminate corruption from all levels of administration (C ₄₅)	0.328	1
	Reward ethical behavior of citizens substantially (C ₄₆)	0.111	4
	Publicize and disseminate ethical behavior of citizens widely (C ₄₇)	0.085	7
Establishing a mature, liberal and tolerant society (C ₅)	Provide free and compulsory primary and secondary education to all (C ₅₁)	0.128	4
	Provide broad based education curriculum that includes spiritual, psychological, societal and career developments (C ₅₂)	0.180	2
	Emphasize universal worldview in speeches (C ₅₃)	0.056	6
	Be receptive to new and superior ideas (C ₅₄)	0.113	5
	Adopt and implement excellent ideas for the benefit of the nation irrespective of their origin (C ₅₅)	0.153	3
	Have morally upright leaders in the government (C ₅₆)	0.369	1
Establishing a scientific and progressive society (C ₆)	Carefully design the education curriculum to include the science and technology component (C ₆₁)	0.153	4
	Provide resources for R&D in scientific research, information technology and other potential fields for the future growth (C ₆₂)	0.184	3
	Hire highly qualified and experienced personnel (C ₆₃)	0.193	2
	Create a special incentive package for celebrated scientists in the country (C ₆₄)	0.078	6
	Organize regular series of lectures by world-renowned scientists (C ₆₅)	0.071	7
	Recognize and reward all contributors in science and technology (C ₆₆)	0.119	5
	Achieve technology mastery (C ₆₇)	0.201	1
Establish a fully caring society (C ₇)	Enhance awareness among the citizens about the obligation to work together to create a caring society (C ₇₁)	0.133	5
	Establish suitable programs to look after the overall welfare of the less fortunate people (C ₇₂)	0.112	6
	Develop human capital (C ₇₃)	0.212	1
	Employ competent and trained staff to implement the programs (C ₇₄)	0.160	4
	Encourage all institutions, including the employers to promote family values (C ₇₅)	0.200	2
Implement comprehensive poverty eradication programs (C ₇₆)	0.183	3	
Ensuring an economically just society (C ₈)	Maintain fair prices of products and services (C ₈₁)	0.145	4
	Distribute government wealth justly (C ₈₂)	0.161	2
	Regulate against business monopoly (C ₈₃)	0.105	7
	Regulate against dumping of goods at low prices in order to push weak competitors away (C ₈₄)	0.121	6
	Provide government loans and subsidies to help establish businesses (C ₈₅)	0.147	3
	Facilitate the private sector to contribute significantly towards the nation's economic growth (C ₈₆)	0.194	1
	Encourage fair foreign competition (C ₈₇)	0.127	5
Establish a prosperous society (C ₉)	Provide consistently efficient public facilities (C ₉₁)	0.103	6
	Establish an efficient and passenger friendly public transportation system (C ₉₂)	0.065	7
	Increase per capita income (C ₉₃)	0.126	3
	Ensure the operation of a fair judicial system at all levels in the country (C ₉₄)	0.204	2
	Continually develop and adopt suitable technology (C ₉₅)	0.114	5
	Ensure that the public feels safe anywhere in the country (C ₉₆)	0.270	1
	Create a policy of environmental protection and enhancement (C ₉₇)	0.118	4

In his opening speech at the Malaysian Education Summit 2004, on a general note, Abdullah asserted that education now would be the priority area for his government and that one particular objective was to create world class universities in

Malaysia. In the Ninth Malaysia plan, education forms 10.2 percent of development expenditure, which is considered as a substantial allocation in comparison to other areas. A number of new initiatives have also been taken to ensure quality and

Exhibit 3. Interval pairwise comparison matrices.

	C ₁₁	C ₁₂	C ₁₃	C ₁₄	C ₁₅	C ₁₆	C ₁₇		C ₂₁	C ₂₂	C ₂₃	C ₂₄	C ₂₅	C ₂₆	C ₂₇
C ₁₁	1	1/8,9	1/8,7	1/8,9	1/8,9	1/8,7	1/8,7	C ₂₁	1	1/8,9	1/7,9	1/9,9	1/9,9	1/9,8	1/9,9
C ₁₂		1	1/9,9	1/7,7	1/9,9	1/9,9	1/9,9	C ₂₂		1	1/7,7	1/9,8	1/9,7	1/9,8	1/9,8
C ₁₃			1	1/7,9	1/7,9	1/9,7	1/9,7	C ₂₃			1	1/9,7	1/9,7	1/9,8	1/9,9
C ₁₄				1	1/7,9	1/9,8	1/9,7	C ₂₄				1	1/9,9	1/9,8	1/9,8
C ₁₅					1	1/9,8	1/9,7	C ₂₅					1	1/9,8	1/9,8
C ₁₆						1	1/9,9	C ₂₆						1	1/9,9
C ₁₇							1	C ₂₇							1
	C ₃₁	C ₃₂	C ₃₃	C ₃₄	C ₃₅	C ₃₆		C ₄₁	C ₄₂	C ₄₃	C ₄₄	C ₄₅	C ₄₆	C ₄₇	
C ₃₁	1	1/8,9	1/7,9	1/9,8	1/9,9	1/9,8	C ₄₁	1	1/9,9	1/9,9	1/9,7	1/9,9	1/9,8	1/9,9	
C ₃₂		1	1/8,9	1/7,9	1/9,8	1/8,9	C ₄₂		1	1/7,9	1/9,8	1/9,7	1/9,8	1/9,9	
C ₃₃			1	1/8,8	1/9,8	1/9,8	C ₄₃			1	1/9,8	1/9,9	1/8,8	1/8,9	
C ₃₄				1	1/9,7	1/9,7	C ₄₄				1	1/9,9	1/8,8	1/8,8	
C ₃₅					1	1/9,9	C ₄₅					1	1/7,9	1/8,9	
C ₃₆						1	C ₄₆						1	1/9,9	
	C ₅₁	C ₅₂	C ₅₃	C ₅₄	C ₅₅	C ₅₆		C ₆₁	C ₆₂	C ₆₃	C ₆₄	C ₆₅	C ₆₆	C ₆₇	
C ₅₁	1	1/9,9	1/6,9	1/9,9	1/9,8	1/9,9	C ₆₁	1	1/9,8	1/9,8	1/7,8	1/9,9	1/9,8	1/9,7	
C ₅₂		1	1/6,9	1/9,8	1/9,9	1/9,9	C ₆₂		1	1/9,8	1/7,8	1/3,9	1/8,8	1/9,9	
C ₅₃			1	1/9,7	1/9,7	1/9,9	C ₆₃			1	1/3,9	1/7,9	1/8,9	1/9,9	
C ₅₄				1	1/9,9	1/9,9	C ₆₄				1	1/9,8	1/9,8	1/9,8	
C ₅₅					1	1/9,9	C ₆₅					1	1/8,7	1/9,7	
C ₅₆						1	C ₆₆						1	1/9,9	
	C ₇₁	C ₇₂	C ₇₃	C ₇₄	C ₇₅	C ₇₆		C ₈₁	C ₈₂	C ₈₃	C ₈₄	C ₈₅	C ₈₆	C ₈₇	
C ₇₁	1	1/9,9	1/9,8	1/9,7	1/9,8	1/9,7	C ₈₁	1	1/8,9	1/8,7	1/9,9	1/9,8	1/7,8	1/9,9	
C ₇₂		1	1/9,7	1/9,7	1/9,8	1/9,7	C ₈₂		1	1/9,8	1/9,9	1/7,9	1/7,7	1/9,8	
C ₇₃			1	1/9,9	1/9,9	1/9,9	C ₈₃			1	1/8,8	1/7,8	1/8,7	1/9,9	
C ₇₄				1	1/9,9	1/9,9	C ₈₄				1	1/7,8	1/9,9	1/9,9	
C ₇₅					1	1/9,9	C ₈₅					1	1/7,9	1/9,8	
C ₇₆						1	C ₈₆						1	1/9,9	
	C ₉₁	C ₉₂	C ₉₃	C ₉₄	C ₉₅	C ₉₆	C ₉₇								
C ₉₁	1	1/8,9	1/9,9	1/9,8	1/9,9	1/9,6	1/9,7								
C ₉₂		1	1/9,7	1/9,9	1/8,9	1/9,9	1/9,9								
C ₉₃			1	1/9,9	1/8,9	1/9,9	1/9,9								
C ₉₄				1	1/9,9	1/9,9	1/7,9								
C ₉₅					1	1/9,9	1/9,9								
C ₉₆						1	1/8,9								
C ₉₇							1								

high standards in schools, polytechnics, community colleges and universities.

3.2.4. Developing human capital

On this issue much has been deliberated and written. Mohamad ([5], p. 5) said:

In our drive to move vigorously ahead nothing is more important than the development of human resources. What we have between our ears, at our elbow and in our heart is much more important than what we have below our feet and around us.

Sopiee ([15], p. 95) mentioned:

A country's human resources are its ultimate and most important resource. The constant development of human resource welfare and upgrading must accompany us each step of the way to 2020 or we cannot expect to reach our destination. ... a country cannot be regarded as fully developed unless it is developed multi-dimensionally – just as no man is developed if only a part of his being is developed. Just as a man cannot be regarded as developed if he is without “character”, the same must be said of a nation.

Indeed, Sopiee is not far from truth. It is the human resource that is the most vital for achieving V-2020. A country may be developed materialistically, but if its human resources are kept at the bay, then it is unlikely to sustain the economic development. The same thing was communicated to us by numerous people when we embarked upon the task of data collection. Human capital has bearing on many aspects including public delivery or civil service. Civil servants have emphatic role in achieving V-2020. To bring smoothness in public administration, bureaucracy and bottlenecks must be removed. One respondent maintained: public delivery system needs to be improved in order to realize V-2020. V-2020 requires complete public readiness to embrace the necessary changes and to do so it is imperative for a quantum leap towards human resource development. Citing Japan, Switzerland and South Korea, Abdullah [16] says these countries do not have minerals and the climate, land structure and soil are not conducive to agriculture. Yet these countries have achieved spectacular economic growth on the strength and ingenuity of their human resources. Tun Mahathir said (Mohamad [5], p. 5):

It is blindingly clear that the most important resource of any nation must be the talents, skills, creativity and will of its

people.... HRD has emerged as a vehicle towards realizing the goals of 2020 industrialization and economic growth depends principally on the development of people – of their potentials, skills, capabilities, resourcefulness and commitment. They are the carriers and the guardian of the nation.

In order to develop human resources, the necessity of a strong family institution cannot be overlooked. Al-Habshi's ([19], p. 6) comment is pertinent here:

We cannot consider individuals as the smallest unit in the social system. We have to work on the basis of family as the smallest unit in our social system. The importance of a strong family system cannot be underestimated. Although our family ties are still strong, we cannot take for granted anymore, but must consciously and vigorously reinforce it. The family after all is still the first school for everyone.

Further the author mentioned that (p. 12):

We need to develop our nation through the process of human development and not only through the process of human resource development. We have been very successful with human resource development, i.e. the development of various professional and semi-professional skills, through proper education and training. This is definitely necessary need but obviously not sufficient. These human resources need to be as human as possible. In other words, there should be integration between the spiritual or contribution need and the professional ability.

3.2.5. Eradication of poverty

At present overall poverty rate in the country is at 5.7 per cent, while the hardcore poverty is 1.2 per cent. The government's target is to reduce overall poverty to 2.8 per cent and to eradicate hardcore poverty entirely by 2010. Poverty eradication must be the first step in the larger effort to address disparities in the socio-economic achievements of the country. Prime Minister Abdullah stressed on education to the way out of poverty (reported in New Straits Times, July 24, 2003, p.3):

Through education, their (people's) lives can be improved and they can be freed from the cycle of poverty.

Malaysia's present poverty eradication strategies include, among others, increasing public healthcare to spur productivity and reduce absenteeism, providing housing, cooperation with non-governmental organizations to improve the environment and living conditions. Under the present Ninth Malaysian Plan, the government is enhancing *Amanah Ikhtiar Malaysia* and various capacity building programs to ensure their effectiveness in lifting households out of poverty. The government also wants to reduce rural-urban income ratio from 1:2.11 in 2004–1:2.0 by 2010.

According to Mahathir, no one is against the eradication of absolute poverty regardless of race, and irrespective of geographical location. All Malaysians, whether they live in the rural or the urban areas, whether they are in the south, north, east or west, must be moved above the line of absolute poverty.

3.2.6. Elimination of corruption

Through empirical investigation, Strauss [20] finds that corruption affects growth and government efficiency in developing countries. Mauro [21] also found corruption as a robust negative determinant of investment, which in turn has negative implication for the rate of growth in the economy.

Since 1995, Transparency International has been publishing an annual Corruption Perception Index (CPI) that ranks the countries

of the world according to the degree to which corruption is perceived to exist among public officials and politicians. The organization defines corruption as "the abuse of entrusted power for private gain". However, what is legally defined to be corruption differs between jurisdictions: a political donation legal in some jurisdiction may be illegal in another; a matter viewed as acceptable tipping in one country may be construed as bribery in another. The 2008 Transparency International poll covered over 180 countries. A higher CPI means less (perceived) corruption. According to the CPI, Malaysia's rank in 2008 is 47th in the world. This shows Malaysia has ample rooms for improving public perception about corruption. In fact, people have been highly vocal against any kind of corruption in the government machinery.

3.2.7. Private sector's role in economic growth

Usually, private sector is regarded as the main engine of economic growth in a country. However, government should facilitate the execution of projects undertaken by the private sector companies. Zulliger [22] strongly feels the necessity a constant dialogue and consultation between the government and private sector to the efficient development of the country and in ensuring that the use of resources is optimized and mistakes avoided at an early stage. The private sector should cooperate and coordinate efforts for Malaysia's march towards Vision 2020 with the public sector's efforts to produce synergy effect out of playing its share of role for Vision 2020 (Shohtoku [23]). Following is a part of Mahathir's speech (see Gatsiounis [24], p. 5):

Until now, a certain mix of talent, pragmatism and will power has enabled Malaysia to develop beyond expectations. Excelling in the ultra competitive ICT industry, though, will likely require something extra, a formula Malaysia is still grasping for. But it's becoming increasingly clear that the private sector, rather than the government, should be leading the country's ambitious drive into the brave, new global information age.

In the Ninth Malaysian Plan, the government has emphasized collaboration between public and private sector in the areas of R&D, human capital development and fulfillment of socio-economic objectives, particularly with respect to poverty eradication, and equity and employment restructuring. Further, Private sector and government linked companies are encouraged to venture abroad to secure business and investment opportunities. This move is expected to increase access to new markets, create demand for domestically produced intermediate goods and components, provide a hedge against domestic economic slowdown and help to create Malaysian multinational corporations in the long-term.

3.2.8. Economic development

Though it has been mentioned that Malaysia will not concentrate on economic development only, however, by and large, it is one of the most important requirements for a country that aspires to become a developed one. V-2020 envisaged that by doubling the nation's real GDP every ten years, which will grow at the rate of 7% per annum, the country's GDP should therefore be eight times larger (compared to early 1990s when V-2020 was unveiled). Exhibit 4 provides the Economic Planning Unit's forecast (Sulaiman [25]):

Sulaiman also mentioned that the manufacturing sector which is expected to grow rapidly and reach maturity by the year 2020 is expected to account for around 40% of output by the year 2020, compared to its share of 27% in 1990. The service sector as a whole

Exhibit 4. Malaysia: GDP, employment and productivity.

	1990	2000	2010	2020
GDP	79,103	155,650	321,490	601,280
Manufacturing	21,381	57,860	130,940	240,430
Non-government services	25,025	57,660	135,890	282,720
EMPLOYMENT	6621	8990	11,910	14,870
Manufacturing	1290	2140	3100	3870
Non-government services	2177	3440	5055	6820
GDP PER WORKER	11,947	17,320	26,980	40,150
Manufacturing	16,572	26,990	42,310	62,190
Non-government services	11,495	16,760	26,880	41,450
	Average Growth Rate (%)			
	1981–90	1991–2000	2001–10	2011–20
GDP	5.9	7.0	7.5	6.5
Manufacturing	9.4	10.5	8.5	6.3
Non-government services	6.5	8.7	9.0	7.6
EMPLOYMENT	3.2	3.1	2.9	2.2
Manufacturing	5.6	5.2	3.7	2.2
Non-government services	5.2	4.7	3.9	3.0
GDP PER WORKER	2.6	3.8	4.5	4.3
Manufacturing	3.6	5.0	4.6	3.6
Non-government services	1.3	3.8	4.8	4.4

will increase its share of output from 41.8% in 1990 to around 50% by the year 2020. The author cautioned that the above growths will not come automatically (p. 183):

...they (the required various growth rates) demand that Malaysia pursue correct policies to achieve a competitive and dynamic industrial structure, supported by a strong modern services sector. The scenarios, in addition, demand that the Malaysian economy continuously progress from low value-added and traditional economic activities to newer and higher value-added activities so as to support a continuous increase in per capita incomes.

On the issue of per capita income, Mahathir Mohamad (Mohamad [5]) said when the nation became independent, the per capita income was US\$300, at this time (the time when V-2020 was unveiled, i.e. 1991), it is US\$2000-US\$2300 and by 2020, the per capita income should reach to US\$26,000. To achieve this lofty target, the country must maintain its growth rate of 7% per annum. According to Sulaiman, this is possible as the country has enormous strengths including a high domestic savings rate, a relatively well-developed physical, social and institutional infrastructure, political, economic and financial stability as well as relatively developed private sector-driven manufacturing and industrial base. This is also supported by Hasan [26]. According to him, Malaysia will join the countries of 'High Income' just in time, i.e., in the year 2020.

In his "Malaysia: Way Forward" speech, Mahathir put a cautionary note: By the year 2020, to reach a stage where no one can say that a particular ethnic group is inherently economically backward and another is economically inherently advanced. Such a situation is what we must work for efficiently, effectively, with fairness and with dedication. In direct reference to Bumiputras (the original inhabitants of Malaysia), he mentioned that if they are not brought into the mainstream, if their potentials are not fully developed, if they are allowed to be a millstone around the national neck, then country's progress is going to be retarded by that much.

3.2.9. Science, technology and R&D

One critical aspect spelled out in the Second Outline Perspective Plan³ (OPP2, 1991–2000) was: "Making science and technology an integral component of socio-economic planning and development, which entails building competence in strategic and knowledge-based technologies and promoting a science and technology culture in the process of building a modern industrial economy" (Rahman [4]). The plan also aimed at achieving a higher ratio of Science and Technology (S&T) personnel to around 1000 per million of population. However, the progress has been rather slow. As in 1998, the number of scientists and engineers per million was only 500 – well short of the target 1000 by the year 2000 (Siang [27]). Wing's [28] statistics are also not encouraging. He mentioned that in R&D, Malaysia spent the equivalent of only 0.5 per cent of its Gross Domestic Product in 2000 compared to 2.65 per cent by the United States, 2.8 per cent by Japan and 2.38 per cent by Germany. In terms of manpower for R&D, Malaysia had 15.6 researchers per 10,000 labor force compared to Japan's 136, the US's 74 and South Korea's 60. In patents registration, official figures show that less than five per cent or only 271 of the 6000 patents applied through Malaysia in 2001 were from local companies. Japan's Matsushita corporation alone files 15,000 applications for patents registration annually.

To promote scientific and technological research, Rahman [4] suggested to the government to provide incentives to attract Malaysian researchers, engineers and scientists working overseas to return to Malaysia. The suggestion has been implemented by the government, but the expectation has not yet been fulfilled. According to Deputy Science, Technology and Environment Minister Datuk Zainal Dahlan, Malaysia still lacks scientists in specific fields and the government's drive to encourage Malaysian scientists overseas to return has yet to yield satisfactory results (Pillay [29]).

Sulaiman [25] suggested to the government to spend at least 2% of the nation's GNP by 2010 and 2.5% by 2020. He also suggested Malaysian companies to invest in training and HRD, whether individually or on an industry wide basis, to meet their specific needs. They should also begin to embark on conducting R&D to find improved and more efficient production methods, new markets, new products, and new applications for existing products. According to him, such R&D and HRD efforts would facilitate their diversification into newer and higher value-added lines of business.

Vicziany and Puteh [30] noted that Malaysia's technical integration, by comparison is lower than its economic integration. According to Sulaiman [25] the level of skills of the country's labor force is not up to the mark. He said (p. 191):

... rapid technological change which occur as Malaysia gets further into the age of micro-electronics, fiber-optics, information technology, bio-technology and laser technology will require the development of a labor force with the right kind of training.

The author further mentioned that the manufacturing sector is expected to shift from simple assembly and process type operations to the more advanced, sophisticated and higher value-added and higher skill industries. Similarly, in the modern services sector, productivity gains and the push for competitiveness will demand wider application of the latest technology and more sophisticated method of operations especially in areas such as banking, finance, insurance and business services.

³ Malaysia has two kinds of national development plan. One spans for five years and the other one 10 years. The present five year plan or Ninth Malaysian Plan is valid for 2006 until 2010, where as the other plan is called Outline Perspective Plan (or OPP). The present OPP is OPP3 and spans from 2001 and will finish at 2010.

To boost science and technology sector, Rahman [4] proposed the following:

- The S & T planning and management process including the channels for science advice in all sectors and at all levels must be improved.
- Interaction between government R&D institutions and industry should be facilitated.
- The necessary institutions and mechanisms to support the above as well as for global market analysis and international marketing channels should be established.
- The necessary tools and resource to enable educational institutions to play a full role in scientific and technological manpower development in support of national/industrial objectives should be provided.
- A national body named National Council for Science and Technology should be established to harness efforts and resources from all sectors.

3.3. Analysis based upon demography

It is observed that people of various races have differed in priorities and ranks of many critical success factors for various V-2020 challenges as shown in Table 3. This is also clear from the rank correlation coefficients (RCCs) provided in Table 4. Some of these differences are discussed in the following:

- On Challenge 1 (Establishing a united Malaysian nation), Malays think that 'Encourage active participation of all ethnic groups in government decisions' is more important than other CSFs. On the other hand, Chinese and Indians consider that 'Give complete freedom to practice any religion' and 'Ensure that academic curricula promote racial integration', respectively, are more important compared to other CSFs for the same challenge.
- On Challenge 3 (Developing a mature democratic community), Malays and Chinese assign maximum importance to 'People should have the power to change the government when it fails to perform', where as Indians deem 'Free the law courts from political intervention' is the most important.
- Malays, Chinese and Indians also differ on ranking of the CSFs for Challenge 6, viz 'Establishing a scientific and progressive society'. According to the three races, the most important factor to address the challenge are respectively, 'Provide resources for R&D in scientific research, information technology and other potential fields for the future growth', 'Hire highly qualified and experienced personnel', and 'Achieve technology mastery'.
- Like challenge 6, the three major races also differ on Challenge 7 and Challenge 8. On Challenge 7 namely, 'Establishing a fully caring society' Malays consider 'Develop human capital' is the most important. But Chinese and Indians consider 'Employ competent and trained staff to implement the programs' and 'Implement comprehensive poverty eradication programs', respectively as the most important factors.
- On Challenge 8, namely 'Ensuring an economically just society', Malays and Chinese have assigned higher priority to 'Facilitate private sector to contribute significantly towards the nation's economic growth' but Indians deem otherwise; according to them 'Provide government loans and subsidies to help establish businesses' is the most important to address the Challenge 8.

Despite the above differences in opinions, there are certain CSFs on which a fair amount of consensus has been achieved. Some of these CSFs are provided below:

Table 3
Priorities and corresponding ranks of CSFs according to race.

Critical Success Factors	Malay		Chinese		Indian		Int'l	
	Weight	Rank	Weight	Rank	Weight	Rank	Weight	Rank
C ₁₁ ^a	0.138	5	0.087	7	0.120	4	0.127	5
C ₁₂	0.092	7	0.101	6	0.136	3	0.062	7
C ₁₃	0.101	6	0.226	1	0.070	6	0.125	6
C ₁₄	0.172	1	0.139	4	0.161	2	0.156	3
C ₁₅	0.163	4	0.126	5	0.049	7	0.130	4
C ₁₆	0.164	3	0.143	3	0.364	1	0.201	1
C ₁₇	0.169	2	0.178	2	0.099	5	0.199	2
C ₂₁	0.125	5	0.144	3	0.212	1	0.101	7
C ₂₂	0.128	4	0.090	6	0.118	5	0.108	5
C ₂₃	0.070	6	0.072	7	0.060	7	0.104	6
C ₂₄	0.219	2	0.204	2	0.146	4	0.218	1
C ₂₅	0.061	7	0.138	4	0.083	6	0.108	4
C ₂₆	0.231	1	0.257	1	0.188	3	0.183	2
C ₂₇	0.166	3	0.094	5	0.193	2	0.177	3
C ₃₁	0.225	2	0.230	2	0.215	3	0.131	4
C ₃₂	0.257	1	0.275	1	0.149	4	0.181	3
C ₃₃	0.069	6	0.088	5	0.058	6	0.080	6
C ₃₄	0.087	5	0.055	6	0.075	5	0.093	5
C ₃₅	0.207	3	0.136	4	0.283	1	0.327	1
C ₃₆	0.155	4	0.216	3	0.219	2	0.188	2
C ₄₁	0.096	4	0.094	6	0.088	6	0.128	5
C ₄₂	0.175	2	0.108	5	0.095	5	0.180	2
C ₄₃	0.093	5	0.079	7	0.098	4	0.098	6
C ₄₄	0.117	3	0.158	2	0.151	2	0.137	4
C ₄₅	0.343	1	0.330	1	0.390	1	0.192	1
C ₄₆	0.093	6	0.117	3	0.112	3	0.171	3
C ₄₇	0.083	7	0.114	4	0.066	7	0.094	7
C ₅₁	0.133	4	0.076	5	0.190	3	0.115	4
C ₅₂	0.177	2	0.165	3	0.212	2	0.188	2
C ₅₃	0.054	6	0.063	6	0.032	6	0.078	6
C ₅₄	0.108	5	0.155	4	0.112	5	0.103	5
C ₅₅	0.150	3	0.236	2	0.120	4	0.120	3
C ₅₆	0.377	1	0.305	1	0.335	1	0.395	1
C ₆₁	0.175	3	0.106	5	0.122	4	0.128	5
C ₆₂	0.200	1	0.133	3	0.151	3	0.182	3
C ₆₃	0.195	2	0.248	1	0.096	5	0.185	2
C ₆₄	0.084	6	0.067	7	0.046	6	0.100	6
C ₆₅	0.076	7	0.088	6	0.045	7	0.064	7
C ₆₆	0.111	5	0.113	4	0.152	2	0.153	4
C ₆₇	0.158	4	0.244	2	0.387	1	0.189	1
C ₇₁	0.136	5	0.217	2	0.040	6	0.149	4
C ₇₂	0.107	6	0.072	6	0.086	5	0.166	3
C ₇₃	0.242	1	0.153	4	0.068	3	0.206	2
C ₇₄	0.150	4	0.263	1	0.180	2	0.107	6
C ₇₅	0.183	2	0.154	3	0.222	1	0.244	1
C ₇₆	0.182	3	0.140	5	0.405		0.129	5
C ₈₁	0.156	3	0.102	5	0.149	3	0.152	3
C ₈₂	0.176	2	0.080	7	0.143	4	0.201	1
C ₈₃	0.096	7	0.095	6	0.113	6	0.104	7
C ₈₄	0.111	6	0.122	3	0.109	7	0.143	4
C ₈₅	0.139	4	0.187	2	0.198	1	0.123	5
C ₈₆	0.210	1	0.310	1	0.117	5	0.122	6
C ₈₇	0.112	5	0.104	4	0.171	2	0.155	2
C ₉₁	0.098	6	0.082	5	0.096	5	0.121	4
C ₉₂	0.062	7	0.052	7	0.089	6	0.080	7
C ₉₃	0.119	4	0.066	6	0.175	3	0.156	3
C ₉₄	0.193	2	0.284	1	0.202	2	0.200	2
C ₉₅	0.108	5	0.143	4	0.102	4	0.103	6
C ₉₆	0.296	1	0.218	2	0.264	1	0.235	1
C ₉₇	0.123	3	0.156	3	0.071	7	0.105	5

^a Legends are provided in Table 2.

- C₂₆: Government should be willing to listen to criticisms from the people and stand answerable to all queries (rank in the order of Malays–Chinese–Indians–Internationals: 1-1-3-2)
- C₄₅: Eliminate corruption from all levels of administration (1-1-1-1)

Table 4
Rank correlation coefficients of CSFs for various races.

	R ₁ R ₂	R ₁ R ₃	R ₁ R ₄	R ₂ R ₃	R ₂ R ₄	R ₃ R ₄
C ₁	0.286	0.286	0.857 ^a	-0.143	0.357	0.357
C ₂	0.607	0.500	0.714	0.536	0.571	0.071
C ₃	0.886 ^a	0.486	0.543	0.371	0.429	0.943 ^b
C ₄	0.357	0.571	0.786 ^a	0.679	0.571	0.679
C ₅	0.886 ^a	0.943 ^b	1.000 ^b	0.714	0.886 ^a	0.943 ^b
C ₆	0.714	0.429	0.679	0.571	0.929 ^b	0.750
C ₇	0.086	0.600	0.429	0.200	-0.314	0.400
C ₈	0.214	0.286	0.286	0.107	-0.429	0.357
C ₉	0.857 ^a	0.643	0.821 ^a	0.500	0.643	0.821 ^a

R₁ = Malay, R₂ = Chinese, R₃ = Indian, R₄ = International.

^a Significant at 5% level.

^b Significant at 1% level.

- C₅₂: Provide broad based education curriculum that includes spiritual, psychological, societal and career developments (2-3-2-2)
- C₅₆: Have morally upright leaders in the government (1-1-1-1)
- C₉₄: Ensure the operation of a fair judicial system at all levels in the country (2-1-2-2)

In particular, people of all races have assigned highest rank on two CSFs namely, 'Eliminate corruption from all levels of administration' and 'Have morally upright leaders in the government'.

From Table 4, we also note the following:

- On Challenge 5, the ranks assigned to the CSFs by various races are not statistically significantly different⁴; this is also clear from the ranks shown explicitly in Table 3.
- The RCCs for all the challenges pertaining to Chinese and Indians are not statistically significant (see column R₂R₃). Therefore, for these two races, the ranks of various CSFs for all the challenges are uncorrelated. It is worth pursuing to further investigate why this is so.
- Only 5 out of 45 RCCs are significant at 1 per cent level (in all these five cases RCCs > 0.900). In addition to the ranking of CSFs of Challenge 5 (as discussed above), Indians & Internationals and Chinese & Internationals agree on the ranks of CSFs of Challenge 3 and Challenge 6, respectively.
- The RCCs pertaining to C₂, C₇, and C₈ are not statistically significant for any combination of races. Hence they differ in terms of assigning priorities to the various CSFs of these challenges.
- Only in one case, perfect correlation has been obtained. This is for Malays and Internationals pertaining to the CSFs of Challenge 5.
- It is rather surprise to observe that the two minority races Chinese and Indians differ widely (negative RCC) on the ranks of the CSFs for one of the most crucial challenges: 'Establishing a united Malaysian nation'. This deserves for further exploration on significantly different views on the matter.

4. Conclusions

It is simply not an easy task to achieve V-2020. We are already in 2009; this means another maximum 12 years to go and a lot of action plans need to be implemented within this timeframe. Unless the government plays an aggressive role and keep reminding the public about the CSFs of V-2020 and common public fully cooperate

⁴ In the rank correlation coefficient test, null hypothesis assumes that the ranks are uncorrelated. Therefore, rejection of null hypothesis implies that the ranks are not significantly different.

with the government in implementing those CSFs, the time limit may need to be pushed to some later date. However, the government should not keep this option (pushing the time to some later date), at least at this moment, rather it should exert all efforts in implementing the CSFs (especially those holding higher ranks and shown separately in this paper) identified in the present research. Finally we conclude by citing Mahathir Mohamad, the architect of V-2020 (Mohamad [5], p. 6–7): *There is obviously a lot for everyone to do. Unfortunately there is no simple one shot formula for developing a nation. Many, many things must be done by many, many people. And they must be done as correctly as possible. We must be prepared to be self-critical and to be willing to make corrections. But God willing, we can succeed.*

The main contribution of the paper is identification of critical success factors and ranking them in order of their importance by taking inputs from the common public. The prioritized list underscores the areas where more resources need to be disbursed. The paper also identifies the areas where various racial groups differ in terms of importance. It may be a worthwhile exercise to explore the reasons of disagreements.

Acknowledgement

The author would like to thank Yusof Ismail for assisting revise the critical success factors. He also thanks to Khairul Islam for assisting data collection using AHP. All the respondents' contributions are also gratefully acknowledged.

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