

Full Length Research Paper

Efficiency in resource allocation: A case study of Greater Irbid Municipality in Jordan

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The study aims at measuring the efficiency of allocating resources for the road sector in The Greater Irbid Municipality, located in the northern part of Jordan. This issue is of high importance to both academics and professionals working in the planning fields. The study seeks to enrich the planning theories through an empirical case study by testing the weights assigned for resource allocation criteria conducted by the officials of the municipality. The Municipality's seven districts were analysed using 2005 data through assigning relative weight to each of the resource allocation criteria applied by the municipality. Based on the findings, the study makes some recommendations; among which are: Resource allocation should be based on standardized criteria and announced to local communities. In addition; the role of financial monitoring process should be enhanced while implementing the plans of municipalities through checking and validating the allocation of resources "criteria" versus the actual implementation.

Key words: Districts, population density, services, roads, traffic volume, accidents, optimal distribution.

INTRODUCTION

Financial resources are among the most important elements for comprehensive development. Therefore, these resources should be optimally distributed among the regions in any country, particularly in developing countries where resources are very limited. Efficient utilization of resources leads to better quality of life for citizens wherever they reside; otherwise socio-economic disparities arise and may create social disorder (Hamdan, 2000).

Random and non-equitable distribution of government's financial resources among the country's regions and sub-regions constitutes an obstacle in the process of socio-economic development, particularly in Third World Countries where disparities among and within regions already exist. The disparities issue has been argued in the planning literature since the growth pole theory of

Perroux, 1955. Many governments around the world have applied the concept of the growth pole theory in their regional policies as a means to reduce disparities within and among their administrative regions. National policies with respect to such sectors as transportation and communications, agriculture, energy, research and development, and education all have varying regional consequences, which in many instances may be more significant than those resulting from regional policies. Nevertheless, government regional policies should be understood as those that have an intentional and formal geographic focus, though they would no doubt use sectoral means in attempting to realize their objectives (Hansen, 1996). Though Neoclassical economists have tended to view such efforts and interventions by central governments as distortions for efficient resource allocation because resources are shifted from productive to less productive regions (Adam et al., 2003). The debate of "equity – efficiency" dilemma is still being argued by planners, professionals and the decision-makers. However, World Development Report, 2009: Reshaping

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Economic Geography, assures that fast and balanced growth among the territorial regions of a country can be achieved through urging the local institutions for implementing policies which focus on integration between developed and less developed areas through a reliable roads' system (Scott, 2009).

Municipalities or local governments are known to be the engine for the provision of resources and implementing the central government's development decisions in their territories as they are providers of social services such as health, education, roads, etc. The responsibility of equitable distribution of resources is the municipalities' sole task because they are closer to local communities' needs and municipal councils are elected from their communities (Al-Zuby, 1998: 102). The closeness of these councils to their local communities makes them realize the needs and aspirations of their communities better than the central government. Thus, these councils are urged to implement the local policies successfully so that socio-economic improvement is felt by local communities (Ministry of Social Development, 1999).

As the democratic concept of development gains momentum in rural areas, local citizens begin to request an equitable distribution of services among the various areas in the country. Despite the understanding of government officials of the equitable distribution of resources, the gap is still clear between Amman, the capital, and other cities in the country (Ministry of Social Development, 2000).

Since absolute equity can't be practically achieved especially in case of limited resources, planners were urged to find a mechanism for best utilization of resources to enhance the social and economic returns. Thus, efficiency and equity debate is considered to be one of the biggest problems challenging development professionals. However, the trade-off between equity and efficiency is decided by a political decision in developing countries (Abu-Kharmeh, 2004; 2005). Thus, the distribution of resources should be based on criteria that take into account the urgent and increasing needs of local communities.

Therefore, planning standards should be provided for distributing financial resources guaranteeing a tradeoff between efficiency and equity. This study examines the application of planning criteria on the roads sector among the sub-districts of the Greater Irbid Municipality as this sector has a great influence on development as whole. The transport sector in general and particularly roads have a positive impact on the Jordanian economy through its support to the producing sector, transit trade, foreign trade and social development (National Planning Council, 1977). Subsequent plans highlighted the transport sector's significant share in the national economy; it accounted for 15% of Jordan's GDP, a high share compared to the GDP contribution of other infrastructure sectors (Jordan Ministry of Planning, 1993 to 1997).

Due to the importance of this sector in the national economy, clarity and transparency should form the base for distributing financial resources among the districts of the Greater Irbid Municipality. Such allocation of resources should be, based on planning criteria giving each sub-district the relative weight it deserves. In 1998 the government of Jordan decided to merge small proxy municipalities to the major one in the region. Accordingly, the study area, the Greater Irbid Municipality, has seven sub-districts.

LITERATURE REVIEW

There is not a single study dealing directly with the optimum allocation for the municipal financial resources in Jordan. The following review addresses the studies relevant to the subject of this paper in one way or another. Mraiyan (1988) analyzed economic disparities among the governorates' of Jordan through analyzing the budgets of major municipalities. The study concluded that regional planning, which is concerned with spatial dimension of development, should deal with redistribution of economic activities to reduce disparities among the governorates of Jordan (Mraiyan, 1988). Dabbas study 1986 indicated that the revenues of local municipalities should be spent according to priority principle (Dabbas, 1988).

Awamleh, 1994 found that per capita allocation of resources in the major municipalities was different from that of small municipalities, while per capita of self and external finance of municipal councils and village' councils were close. The study found that municipal councils received 95% of the allocation of capital projects, while village councils received only 5% of capital projects (Awamleh, 1994).

Alrawashdeh 1987, emphasized on the side of justice and equality in various aspects of life, he concluded that planning for local development requires guidance from qualified planning professionals and decisions-makers as well. Al-Jamal 2000, also concluded that municipalities should seek justice while dealing with service delivery and should avoid provision of services based on tribal influence (Al-Jamal, 2000).

The case in the Western World is different; municipalities tend to apply techniques of decision-support systems such as Geographic Information System (GIS) in estimating justice among the municipalities' districts; they use GIS accessibility based models as a tools for optimal resource allocation (California PATH Research Report, 2007; City of Onkaparinga, Australia - www.onkaparingacity.com; Konstadinos 2007; Balazinska et al., 2004).

The above review reveals that the research questions of this article have not been fully addressed, therefore, that the findings of this study are expected to raise awareness of planning professionals and decision – makers with regard to the issue of resource allocation

and their consequences.

Importance of the study

The study is important to the field of regional planning because:

I. The study's topic has created a long debate in the planning profession for local development because municipalities are seen as local agencies to central government in implementing its programs and policies (Oadat, 1992).

II. The urgent need for applying the principle of "priorities identification" for optimizing budget resources to cover local development needs.

III. The urgent need for applying planning criteria that best achieve the optimal allocation of resources.

IV. The study is a first of its kind in Jordan, particularly at the municipal level.

Research problem

Most of the Jordanian local municipalities suffer from budget deficits and are thus unable to apply the principle of priority identification while distributing the financial resources to cover the local needs in their territories. The adoption of planning criteria for resource allocation is rarely implemented. This paper investigates this issue with particular emphasis on the roads' sector in the Greater Irbid Municipality, as a case study.

Objectives of the study

The study seeks to achieve the following objectives:

I. Analyze the mechanism of financial distribution for the roads sector and the extent of its compliance with the principle of "priority identification".

II. Explore the sub-districts which should be given the priority as far as distribution of financial resources is concerned.

III. Advise on the best resource allocation criteria that should be adopted by the Greater Irbid Municipality for the roads sector.

METHODOLOGY

Data collection method

The study used descriptive methodology (interviews, questionnaire and descriptive statistical analysis) in collecting facts, data and information about the current procedure of resource allocation for the road sector and comparing it with the municipality's approved criteria. Interviews were also conducted with concerned officials in the Greater Irbid Municipality and the Directorate of Engineering Works in Irbid governorate. Interviews were conducted to assist the researcher in the proper interpretation of study results.

Population of the study

The study area consists of seven districts of the Greater Municipality of Irbid. Available data at the municipality showed that data of 2005 had better coverage than other years for the dimensions of the study such as; districts' population and size, provision of services, roads' intersections, traffic volume and housing units.

Data processing

Data was processed through the following steps:

I. Identification of the relative importance for each criterion according to criteria set by the concerned department at the Greater Irbid Municipality.

II. Identification of values for each sub-district according to above criteria

III. Extraction of the relative importance (weight?) for each sub-district based on the highest weight given for the sub-district which ranks first in each criterion and extract the rest of ratios

The study area

Irbid city

Irbid city is located on a medium and fertile plain and links Jordan with a number of neighboring countries, such as Syria, Lebanon and Iraq. Its fertile soil and moderate climate make the region the country's top agricultural producer.

Irbid city is an investment magnet due to the availability of economic opportunities. For the purpose of services' provision, the city is divided into seven sub-districts, covering a total area of 39.153 km² and a total population of 343, 861 in 2005. Irbid city evolved and flourished in various fields including educational institutions such as universities, colleges and schools, publishing houses, public and private hospitals, health centers, official institutions and sports facilities.

The Directorate of Works and Engineering at Greater Irbid Municipality owns the road network in the city and is in charge of construction, paving and maintaining streets and sidewalks as well as the building and maintenance of municipal facilities and supervision of the supply of materials necessary for this work. Furthermore, the directorate is in charge of taking the necessary precautions to prevent flood damage, fires, and traffic signs. The directorate also monitors the violations of buildings regulations and their setbacks. The Greater Municipality of Irbid has seven sub-districts (The Greater Irbid Municipality, 2005).

The city districts

The city comprises the following seven districts: Al-Naser, Al-Rawdeh, Al-Nuzha, Al-Hashmeah, Al-Barha, Al-Manarah and Al-Rabiah. Table 1 lists the neighborhoods that belong to each district, with the area and population of individual districts. Figure 1 shows the locations of the districts within the boundaries of the Greater Irbid Municipality.

RESULTS AND DISCUSSION

Criteria for resource allocation

The Engineering Directorate – Roads' Section at Greater

Table 1. Neighborhoods', size and population of individual districts.

District	Neighborhoods	Size (km ²)	Population
Al-Naser	Karameh, Odeh, eastern Part of Naser district, Haniena, Yarmouk, Easten Voc. district and western part of Naser district.	5.122	86197
Al-Rawdeh	Alrawdeh, green plain, Zahra, Salam, Andalos, Baqa'a, industrial, Albyadeh and Aleyman.	7.576	47826
Al-Nuzha	Alwrood, Alhekma, Alnuzha, Aljame' and Alafrah.	5.959	43866
Al-Hashmeah	Almydan, Ahashmy, Almalab, Altel and Aljame'.	2.075	22592
Al-Barha	Almetla', Alseha, Alsa'da, Almaraj, Western Herefeen, Alashrafyeh and Al-Basateen.	7.415	52156
Al-Manarah	Manara and Alsweanieh.	3.869	83075
Al-Rabiah.	Alateba'	7.137	8149
Total		39.153	343861

Source: Department of information. Division of statistics. Greater Irbid municipality 2005.

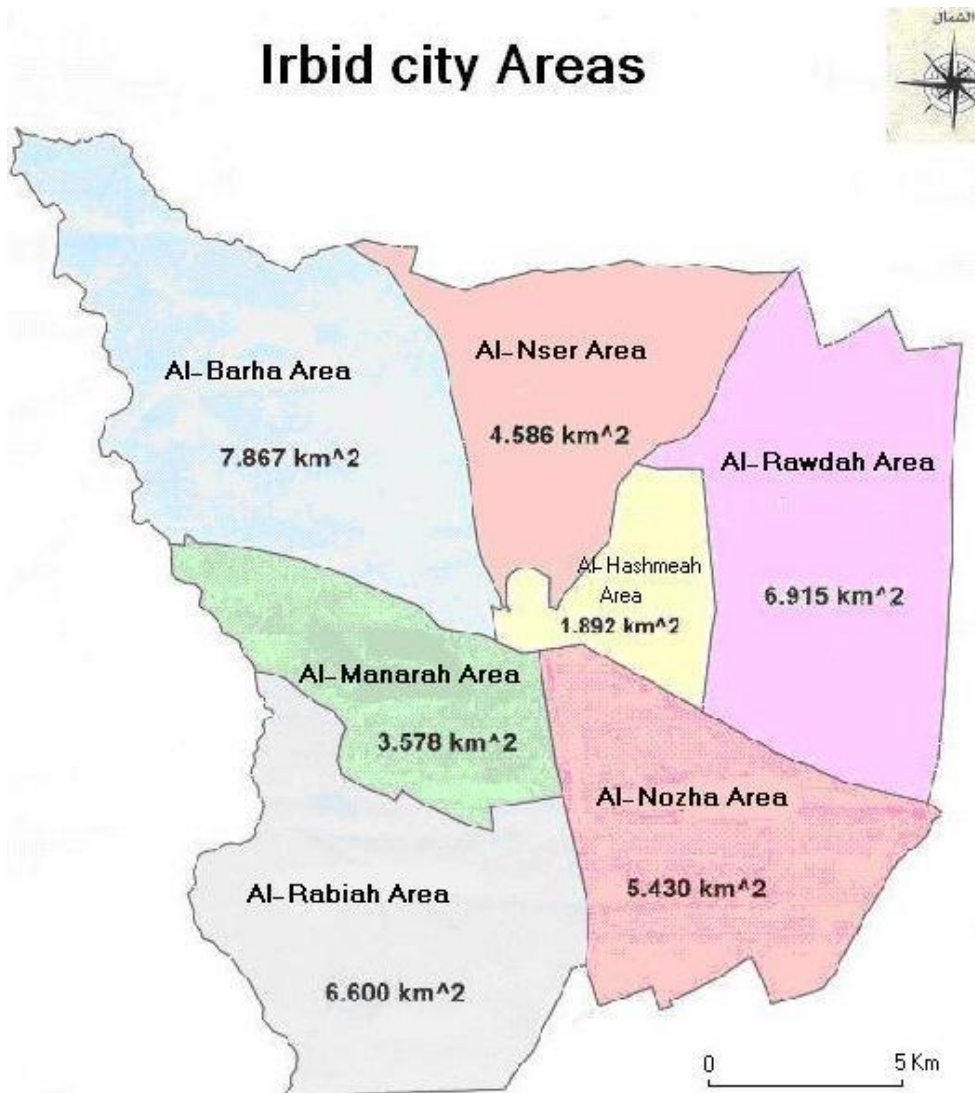


Figure 1. Location of districts.

Table 2. Population, size, and percentage weight assigned for population density criterion for each districts.

District	Size Sq km	Population	Population density	Criterion assigned %
Al-Naser	5.122	86197	16.83	23.5
Al-Rawdeh	7.576	47826	6.31	8.8
Al-Nuzha	5.959	43866	7.36	10.3
Al-Manarah	3.869	83075	21.47	30.0
Al-Hashmeah	2.075	22592	10.89	15.2
Al-Rabiah	7.137	8149	1.14	1.6
Al-Barha	7.415	52156	7.03	9.8

Source: Department of information. Division of statistics. Greater Irbid municipality, 2005. Criteria percentages are calculated by the author.

Table 3. Total number of housing units and percentage weight assigned.

District	Number of housing units	% of housing units	Criterion assigned %
Al-Naser	13696	30.0	30.00
Al-Rawdeh	7076	15.5	15.50
Al-Nuzha	7508	16.4	16.45
Al-Manarah	13651	29.9	29.90
Al-Hashmeah	4243	9.3	9.29
Al-Rabiah	1535	3.4	11.21
Al-Barha	8627	18.9	18.90

Source: Department of Information. Division of Statistics. Greater Irbid Municipality 2005. Criterion percentages are calculated by the author.

Irbid Municipality adopted the following criteria for the purpose of resources allocation (Batayneh, 2005):

- I. Population Density: "The more population density in the area, the higher the priority scores".
- II. Number of Housing units in the Area: "The more houses, the higher the priority scores".
- III. Traffic volume: "The more traffic volume, the higher the priority scores".
- IV. Intersections with a high incidence of road accidents: "The more intersections with high incidence of accidents, the higher the priority scores".
- V. District's delivery of services: "The more services provided by the district, the higher the priority scores".

Each of these criteria was given a percentage weight according to its importance in the roads' sector for determining priorities for resource allocation. As seen in Figure 2, both criteria of district's population density and number of housing units were given the highest weight 30% each, those two criteria reflect that the populated district should have more priority in terms of service delivery. Traffic volume was given the second importance weight (20%) as it implies that the pressure on roads with higher traffic volume requires more maintenance and care. The criteria of intersections causing accidents and the service provision were given 10% each.

Each of these criteria was then calculated for each district and assigned a ratio for each district as follows:

Population density

Population density implies pressure on services provided for each district. Almanara district, the most populated district appears to have the highest priority, while Al-Rabia, the least populated district, has the lowest priority in resource allocation when considering the criterion of population density alone. Table 2 indicates population, size, density and percentage assigned for this criterion among the districts of Greater Irbid Municipality.

Housing units

The number of housing units reflects the relative need for road services; i.e. the more the number of housing units, the more the need for roads' services. This is particularly so when the housing pattern is horizontal as is the case in the study area. That is why a weight of 30% was assigned for this criterion. Table 3 shows the total number of housing units among the districts of Greater Irbid Municipality and their relative percentage weight for resource allocation purposes.

Table 4. Traffic volume and percentage weights assigned for resource allocation.

District	Traffic volume (Peak)	%	Criterion assigned %
Al-Rawdeh	17.5	2249	17
Al-Naser	20.0	2576	20
Al-Nuzha	17.9	2309	18
Al-Hashmeah	14.3	1843	14
Al-Barha	12.3	1581	12
Al-Manarah	17.8	2299	18
Al-Rabiah.	9.9	1280	10

Source: Hasnan Alokoor, Department of Planning and Studies, Division of traffic - Greater Irbid Municipality, 2005. Criterion percentages are calculated by the author.

Table 5. Number of Intersections with high accident rates and the percentage weights assigned.

District	Number of Intersection frequently witness accidents	% of intersections frequently witness accidents	Criterion assigned %
Al-Rawdeh	7.7	2	2.2
Al-Naser	23.1	6	6.7
Al-Nuzha	34.6	9	10.0
Al-Hashmeah	19.2	5	5.6
Al-Barha	3.8	1	1.1
Al-Manarah	7.7	2	2.2
Al-Rabiah.	3.8	1	1.1

Source: Radwan Shamayleh, Traffic Safety Division, Greater Irbid Municipality, 2005. Percentage weights are calculated by the author.

Table 3 shows that districts of Alnaser and Almanara, home to the highest number of housing units, have the highest percentage, while Al-Rabia has the lowest percentage weight. Al-Bariha district comes third (18.9%) in the resource allocation, while Alnuzha is fourth in the list. The rest of districts gained less priority in the resource allocation according to the number of housing units respectively.

Traffic volume criteria

Traffic volume reflects the size of activities operated in the service areas of these roads. Thus roads with more traffic volume would require more services than others because they are frequently used by motorists, and as such require more maintenance and are therefore assigned higher percentage weights for resource allocation purposes. The weight assigned for this criterion is 20%. Based on this weight, Al-Naser and Al-Manra districts were given the highest priority respectively, while the lowest priority was given to Al-Rabiah and Al-Barha districts. Other districts were given middle range priority as shown in Table 4.

Intersections with high incidence of road accidents

Department of traffic and traffic safety at the Greater Irbid

Municipality indicated that roads could be a major cause of accidents, particularly roads that need to eliminate pitfalls, establish traffic signs, stop signs, speed limit signs, and improving middle islands studies, engineering sites and intersections with a high incidence of accidents. Therefore, the priority should be given to roads with more intersections that cause accidents in order to maintain safety measures.

Table 5 shows the number of intersections in the main roads of districts and the percentage weights assigned in terms of resource allocation. The weight assigned for this criterion is 10%.

Table 5 shows that Alnuzha district has the highest number of accident-prone intersections while Al-Barha and Al-Rabiah districts have the lowest number of intersections. Percentage weights for these and other districts are assigned accordingly.

Delivery of services

The diversity of services provided by a district is an indication of the degree of development and progress enjoyed by the residents of that district. Such a district also provides services to the surrounding areas. Therefore, this criterion is assigned 10% weight in terms of resource allocation. Because the relative importance of these services varies from one district to another, each

Table 6. Number of Services and assigned weight for criterion of service provision.

Service	Criterion assigned %
Hospitals	3
Community colleges	2
Hotels	0.5
Parks and libraries	0.5
Police stations	0.5
Sports clubs	0.5
Industries and handcrafts	1
Landmarks	2

Source: Researcher's field work discussions.

Table7. A percentage weight assigned by district.

District	Criterion assigned %
Al-Rawdeh	2
Al-Naser	3
Al-Nuzha	10
Al-Hashmeah	1
Al-Barha	4
Al-Manarah	0
Al-Rabiah	4

Table 8. Summation of criteria percentages for each district.

District	Total
Al-Barha	46.00
Al-Rabiah.	19.90
Al-Rawdeh	45.80
Al-Manarah	79.70
Al-Nuzha	64.60
Al-Naser	83.50
Al-Hashmeah	45.80

of the services available was given a percentage weight according to its importance in development as shown in Table 6. Table 6 shows that hospitals, the most important service, got the highest rate of 3%, while educational services got 2%. Hotels and parks were assigned 0.5% each.

According to the weights assigned for each service as shown in the above table and based on the number of services available in each district, a percentage weight is assigned for each district as shown in the Table 7. The Table 7 shows that Alnuzha district received the highest percentage due the availability of more services in this district, while Al-Manara district got the least percentage because of service scarcity compared to other districts.

Summation of percentages

The previous section estimated the percentage weights assigned for each criterion and for each district within the boundaries of Greater Irbid Municipality. Table 8 shows the accumulated number of percentages for each district for all the criteria suggested for resource allocation in the road's sector.

The Table 8 shows the total percentages for each district which in turn affect the rank of each district in determining priority for resource allocation. The table shows that Al-Naser district had the highest percentage, while Al-Rabiah district got the least percentage. This means that Al-Naser district should be given the highest priority in terms of resource allocation for the road sector whereas. Al- Rabiah district had the lowest priority as shown in Figure 2.

Actual Allocation of Resources for the Roads Sector

Based on the municipality 2003 records of actual expenditure on the road's sector , total expenditures for the roads are calculated and estimated the share for each district based on the municipality's quantity pricing then actual spent amounts were transferred to percentages for each district as shown in Figure 3.

The Figure 4 indicates that Rawda district got the highest allocation of resources for the actual implemented work, followed by Al-Rabia 20%. Figure 5 shows the extent of compliance between the optimal allocation weights as per the municipality's criteria mentioned earlier and the weights of the actual distribution of resources among the districts of the municipality.

Synthesizing the difference between both distributions (Actual and Optimal)

As per the objectives of the study, the previous analysis revealed the following findings:

1. Does the Municipality comply with resource allocation for principle of "priority identification" or not for the road sector?

The results of the analysis show non-compliance of resource allocation with "priority identification" principle. This is confirmed through the following findings:

I. Al-Naser district has the highest need for road services, based on the standardized criteria, and should have therefore received the highest allocation score. When comparing the actual allocation implemented by the municipality, Al-Rawda district got the highest share of allocation (25%) instead of Alnaser district. Al-Rabiah district came second (20%) in place of Al-Manarah district which should have been the second according to optimal allocation and should have therefore received 20% of the

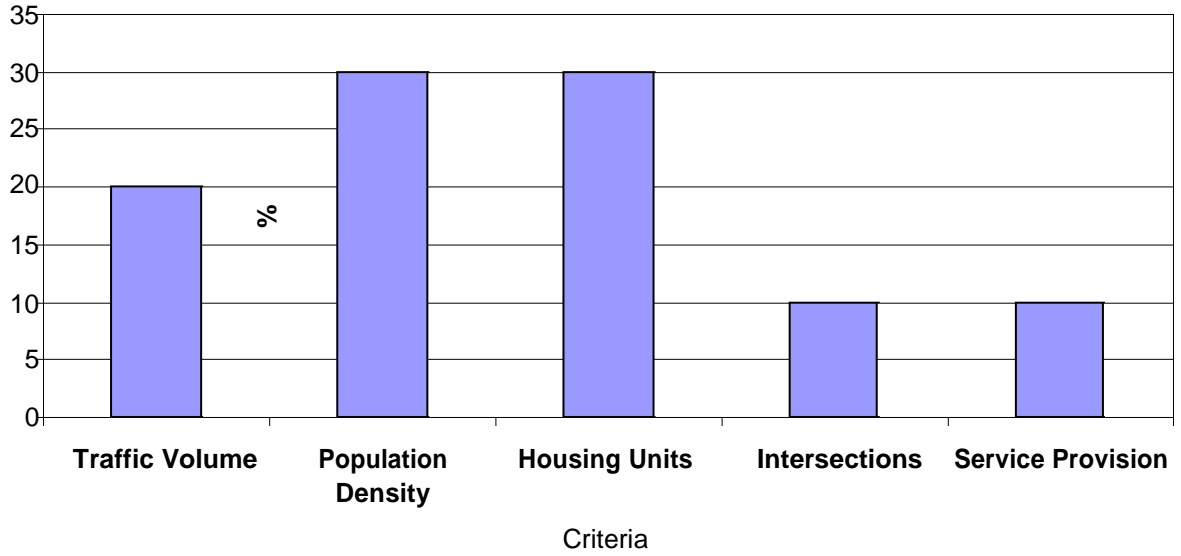


Figure 2. Resources allocation for roads sector.

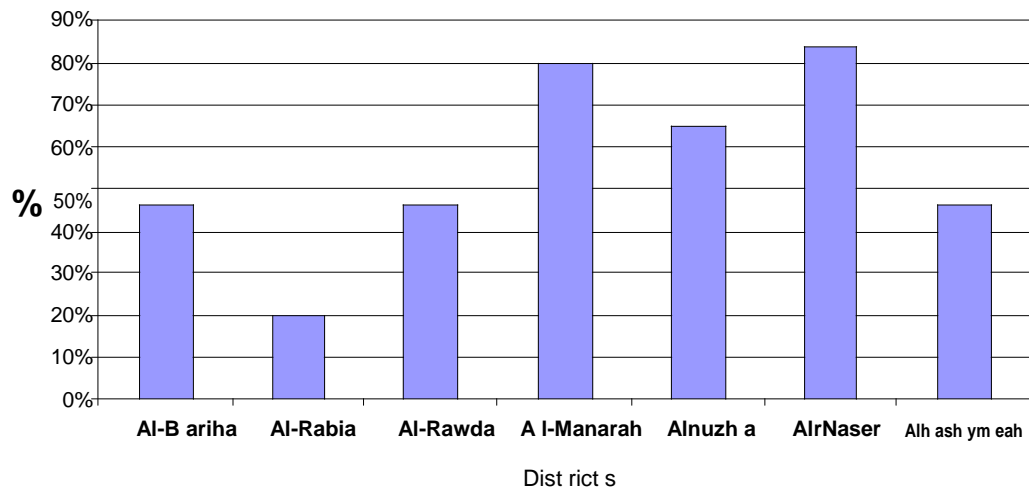


Figure 3. Proposed priority percentages suggested by the Municipality.

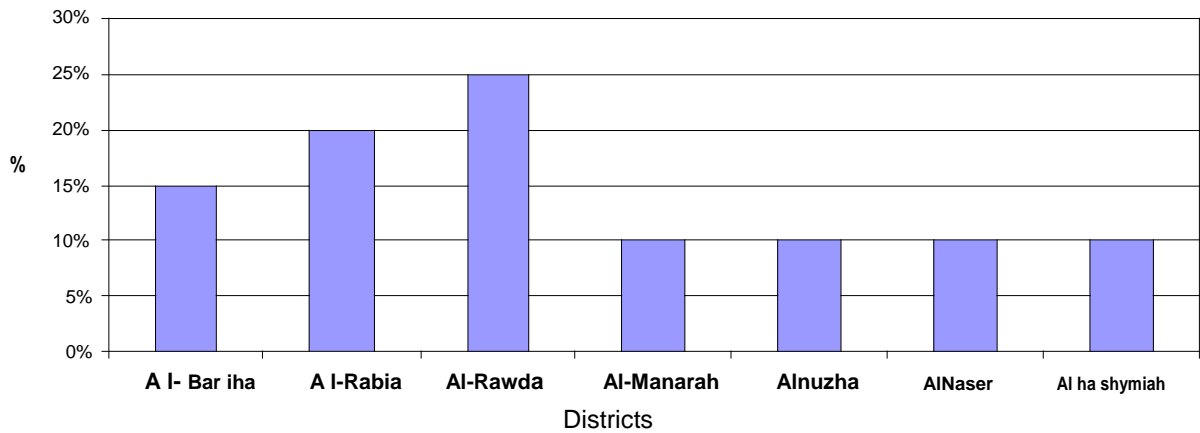


Figure 4. Actual expenditure on the roads sector.

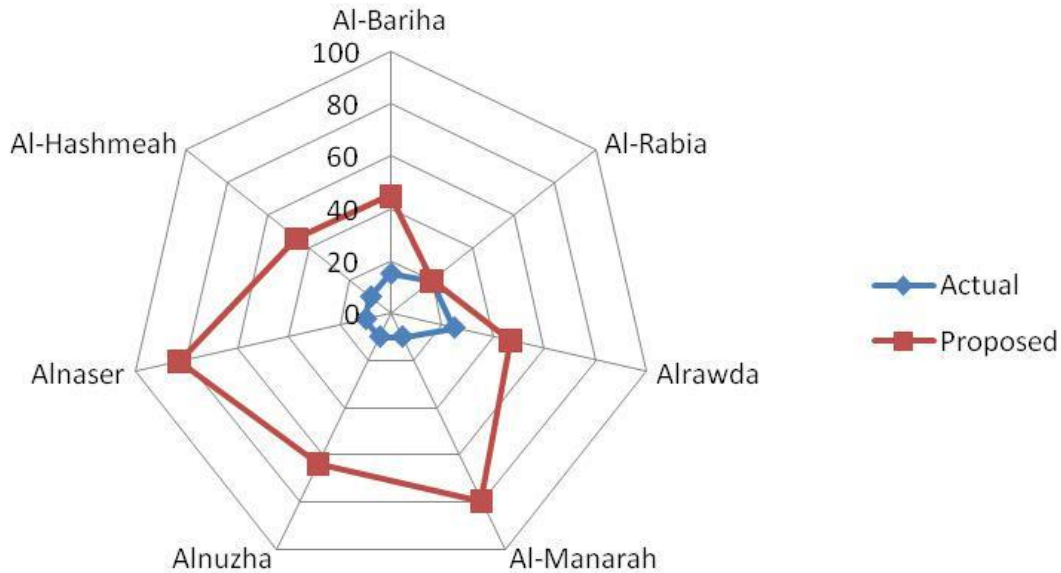


Figure 5. Optimal and Actual distribution of resources for roads sector among the municipality's districts, 2005.

resources, rather than Al-Rabia sub-district.

II. This implies that municipality officials did not apply the standardized criteria that they earlier set as regards allocation of resources.

2. Which district should have been given the highest priority in terms of resource allocation?

We noticed that Al-naser district should have received the highest share of resources.

3. Which are the districts that got the highest and least share of resources according to optimal and actual allocation?

Rawda district got the highest share of resources, while districts of Al-naser, Almanara, Al-nuzha and Alhashemeah got 10% according to actual allocation. Conversely, Al-naser district should have got the highest share and Al-Rabia the least, according to optimal allocation which considers the criteria of resource allocation discussed earlier.

4. What is the adequate shape of resource allocation?

Findings of the analysis show that allocation of resources should be allocated to the districts (in a descending order) from bigger to smaller as follows: Al-Naser, Al-manah, Al-nuzha, Al-barha, Alrwd, Al-Rabia, Alhashemeah and finally Al-Rabia District.

FINDINGS AND RECOMMENDATIONS

1. According to our findings, Greater Irbid Municipality did not comply with the criteria approved by its officials when setting the investment priorities regarding the roads sector. This was elaborated when comparing the actual and optimal expenditures.

2. The findings show indicate that resource allocation exercise is not officially conducted at the municipality, it's an individual initiative rather than an institutionalized practice.

3. The study found that Al-Naser district should have been given the biggest allocation; thus, officials should double their efforts towards this district in terms of resource allocation.

4. The study found that optimally, allocation of resources to districts should be in the following order: Al-Naser, Al-Manarah, Alnuzha, Al-Barha, Al-Rawda, Alhashemeah and Al-Rabia. Conversely, the order of the current allocation of resources was as follows; Al- Rawda, Al-Rabia, Al-Barha, Alnaser, Al-Manarah, Alnaser, Al-Manarah, Alnuzha and finally Alhashemeah.

The above findings as regards resource allocation for the roads' sector in Greater Irbid Municipality illustrate very clearly that other factors are at play in the process of actual implementation of resource allocation. These factors could be represented in the influence of the residents and businessmen "elites" of some districts than others. Though the study did not investigate the existence of corruption and its influence on the resource allocation mechanism, corruption could have had some influence.

Instead of applying the optimal allocation of resources which would in turn reduce disparities among districts and utilize resources optimally, municipality officials contribute to increasing disparities among the sub-districts and to waste of resources. Therefore, as indicated in the World Development Report 2009: Reshaping Economic Geography, local development institutions, such as the

Greater Irbid Municipality, should implement policies which enhance integration among the regions so that balanced and fast growth is achieved.

RECOMMENDATIONS

Based on the findings of the study, the authors recommend the followings:

1. Resource allocation should be based on standardized criteria clarifying the relative importance and urgency of development needs among the sub-districts of municipality.
2. Allocating resources by concerned agencies according to "planning criteria" is a must and concerned agencies should consider calculate positive and negative consequences of this exercise in advance. This should be publicized through the media, so that residents would be aware and officials become accountable for their decisions.
3. Form an experienced planning team at the municipality to set planning criteria for roads and other sectors to serve the public concerns, rather than responding to the influence of individuals or districts.
4. Establish a division at the municipality to be in charge for setting up planning criteria for the municipality's activities so that budgeting becomes more streamlined and better responsive to actual needs.
5. Enforce the role of financial monitoring while implementing the plans of municipalities through checking and validating of resource allocation versus the actual implementations.

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