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The use of university research in planning decision making in Jordanian municipalities

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ABSTRACT

This paper explores the use of university generated research data by Jordanian planning authorities in their decision making processes and identifies factors affecting the use of that research. A mixed method approach employing a questionnaire survey and face-to face in-depth interviews was used for data collection. All ninety three Jordanian planning municipalities were targeted for this study. Findings reveal that the use of research is quite low. Factors affecting the use of research in decision making processes range from legal, administrative, and technological issues to financial, social and people related challenges. A series of recommendations are made that could address these challenges including reassessing the current capacity of municipalities, the establishment of research centers, the amendment of municipalities' laws, human resource development and the encouragement of joint research.

1. Introduction

Urban and regional planning research has expanded rapidly, making development research a major issue in most countries (Cullingworth & Nadin, 1994). Much of that research has been undertaken by universities and other research organizations. In Jordan the number of public and private universities concerned with planning research has grown from four in 1990 to over thirty in 2010 (Ministry of Higher Education & Scientific Research, 2012), suggesting that academics have significant potential for finding solutions to the various planning challenges facing Jordan. These relate to the management of water and energy resources, environmental protection, poverty, unemployment and low incomes, growing refugee numbers and the on-going economic and political crises impacting on the country. Finding solutions requires research, knowledge and technology (Khadr, 2010), but despite extensive efforts by national and international organizations, many initiatives are hindered by poor levels of engagement between decision makers and researchers.

The potential of academic research to influence and shape decision making processes in the municipal sector, with subsequent impacts on local and regional development, is widely acknowledged. Stokes and Coomes (1998) identified such engagement as having positive impacts on knowledge creation, research and economic development. In the context of urban and regional economics, Parsons and Griffiths (2003) argue that academic research has helped to maximize the economic impact of knowledge transformation and has aided the development of new models. For example, as early as 1971, the American Council of Education developed the Caffrey-Isaacs model (widely known as the ACE method) in order to estimate spending within an economic region and the impact of total expenditure on job creation in the surrounding area (Stokes & Coomes, 1998). Such linkages and applications within the planning field can improve institutional performance and enhance social-economic development, clearly suggesting that academic research is a valuable resource for municipalities.

During the past decade, reforming the municipalities sector has been on the agenda of Jordanian government. Municipal reform aims to ensure that limited resources achieve maximum impact, and is focused on the integration of municipalities so that expenditures and financial deficiency can be minimized. However, the process has not been guided by independent research and the reforms have not succeeded in improving the municipalities' situation. According to the Al Urdun Al Jadid Research Centre (2009) the municipalities need to adopt mechanisms for self-evaluation and

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should utilize local universities and the research they undertake in order to develop standards for good local planning and governance. Research has a clear role in enabling municipalities to respond effectively to challenges in cities and villages. Hordijk and Baud (2006) argue that research can help create clear views of urban management that meet the needs of inhabitants. As a result, research can be considered as a strategic tool for current and future planning. Wong, Tang, and Horen (2006, p644) argue that "The adoption of these tools would help ensure that environmental protection and social equity considerations are fully addressed in development planning decision making."

This study seeks to determine how university research findings are used to inform the decision making process in Jordan. It examines and explores current use of academic research in Jordanian planning municipalities and generates recommendations and ideas to enhance the role of research in improving the quality of decision making.

Fig. 1 summarizes the factors which impact on the use of research in decision making processes. Based on the literature, the conceptual model suggests that centralization, finance, self-efficacy, administration culture, quality of research, demographic factors (i.e. years of experience, education level and field of study) will have a direct effect on the use of research. Each of these is now discussed.

2. Centralization

In Jordan, the policy of decision making is governed by law, with decisions made by central authorities. Although the law identifies the municipality as an autonomous organization that has its own financial and administrative independence, municipal decision making is often centralized (Alnsour & Meaton, 2009). This is largely because many articles of the Municipalities' Law of 1955 limit the power and the autonomy of the municipalities and create a relationship of dependence and subordination to the state (Alnsour, 2014). For example, although each municipality is managed by a council comprised of a Mayor and six to eleven elected councilors, the state assigns an unelected manager for each municipality. In addition the law does not impose specific

qualifications and/or experience for the elected councilors, and as a result many councilors do not have the scientific or technical expertise appropriate for the role, and often allow their own tribal and familial interests to influence decision making. The use of research in decision making processes is therefore not established practice. Under these conditions, managers often seek greater financial and administrative powers and fail to consider evidence from research when making decisions (Meaton & Alnsour, 2012). Centralization is likely to be a major obstacle to the adoption and use of research findings and we therefore hypothesize that centralization has a negative impact on the use of research in the decision making process.

3. Finance

Hall & Pfeiffer (2000) argue that decision making in urban management is about adapting to a changing environment under certain financial, technological and human conditions. Fig. 1 identifies two financial dimensions; the availability of a sufficient budget and incentives. In many municipalities, most of the budget is allocated for services and wages, and research is often overlooked. Expenditure of municipalities on wages and salaries is about 75% of overall municipalities' budget (Alnsour, 2014) and expenditure on training and development accounts for less than 1% (Ministry of Municipal Affairs, 2014). Financial incentives for research do not exist. Hence, we hypothesize that a lack of finance has a negative impact on the use of research in the decision making process.

4. Self-efficacy

Human resources play a basic role in translating municipal politics into tangible actions. Self-efficacy of human resources is one of the most important instruments to generate positive performance and in turn, positive outcomes for urban areas.

Bandura (1997) describes self-efficacy as one's belief or judgment on what he or she can do with the skill he or she possesses within a certain environment. Self-efficacy beliefs consists of three
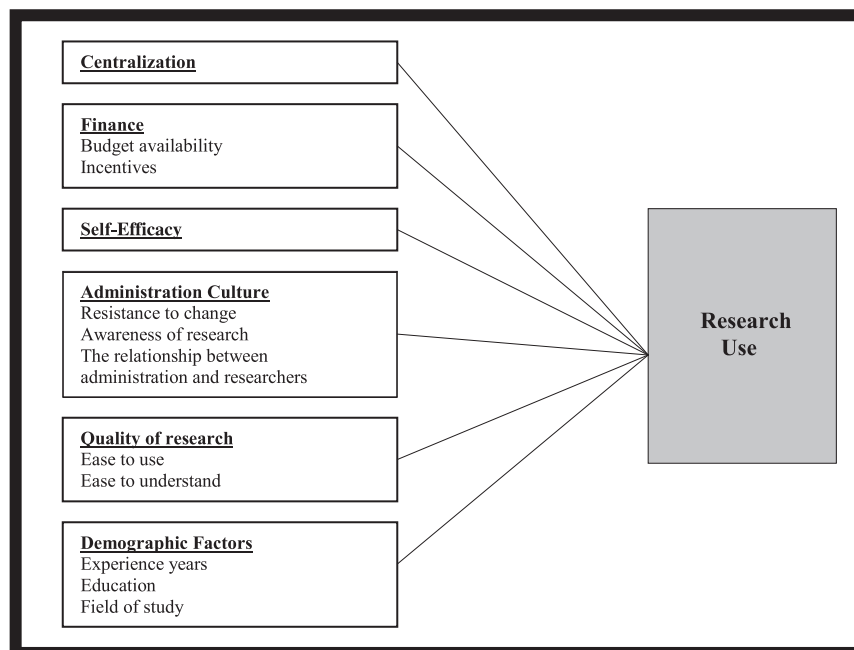

Fig. 1. Factors affecting the use of research in decision making process.

interrelated dimensions including generalizability, magnitude, and strength. Within the municipalities context these skills might be what decision makers can do, such as using research in preparing plans, managing transport and using information technology to analyze data (Lussier & Hendon, 2012). "Generalizability" is about the degree to which one's belief is limited to a specific domain of activity. Thus, individuals with high "generalizability" are expected to be able to confidently use different types of research. The "magnitude" refers to the level of capability expected. Thus, individuals with high "magnitude" (i.e. self-efficacy) perceive themselves competent to accomplish more difficult tasks with minimum support and assistance compared to those with lower "magnitude" of self-efficacy (Lussier & Hendon, 2012). The "strength" of self-efficacy refers to the confidence an individual has regarding their ability to use research in the decision making process (Lussier & Hendon, 2012). It will be interesting to see how this variable works out in practice since efficacy could have two opposing impacts. A high level of self-efficacy might on the one hand mean that the individual will be highly confident and competent at making decisions without perceiving a need to use research findings. Alternatively it may result in a more engaged and evidence based approach that would mean greater use of research findings, and it is this standpoint that underpins the hypothesis that a lack of self-efficacy will have a negative impact on the use of research in the decision making process.

5. Municipal administration culture

Jordanian social structure impacts significantly on municipalities' decisions. The municipalities sector has its own internal culture that reflects the attitudes of managers towards research and knowledge. In this research, municipal administration culture refers to three dimensions including the relationship between administration and researchers, awareness and resistance to change.

In order to link knowledge with decision making the relationship between administration and researchers is crucial (Landry, Amari, Lamari 2001). Municipal administration culture plays an important role in developing the norms and values that help to use research and knowledge in the decision making process.

The use of research begins when the decision maker becomes aware of the role of knowledge in providing a framework to direct decisions. Landry et al. (2001) found that awareness leads to decision makers seeking scientific products and research that offer the most appropriate information for them. According to Alnsour (2011) research is not commonly used in Jordanian urban planning and management and awareness of research quality is low. This could potentially lead to the use of poorly conducted research with questionable findings, with consequent decisions being based on flawed data.

Resistance to change is also a potential barrier to the use of research in the decision making process. In Jordanian municipalities regulations and self-experience are the main basis of decision making and the use of a new strategy might generate a certain amount of resistance (Rakodi, 2001). Unless this issue is addressed

Table 1
Sample characteristics.

Gender	Male 76.3%	Female 23.7%	
Age	(20–29) 4% (50–59) 40%	(30–39) 16% (60–69) 8%	(40–49) 32%
Education level	PhD 1.5% Med Diploma 7.5%	Master 9% Secondary 3%	Bachelor 79%
Scientific field	Engineering 54% Law 9%	Management 31% Social Sciences 6%	
Experience years	Less than 5 13% 11–15 29%	16–20 30%	5–10 22% More than 20 6%

change will be difficult to achieve. Therefore, we hypothesize that municipal administration culture negatively affects the use of research in decision making processes.

6. Quality of research

A significant number of studies suggest that the quality of research can influence a manager's attitude towards the use of research (Boulanger & Brechet, 2005; Heinze, Shapira, Rogers and Senker 2009; Yigitcanlar, O'Connor, Westerman 2008). For example, Coccia and Rolfo (2008) argue that the ease of use of research data is one of the most important characteristics for using research to make policy and planning decisions, (Heinze et al., 2009). Research must be clear and accessible to ensure managerial take-up or acceptance. Thus we hypothesize that poor quality research will have a negative impact on the use of research in the decision making process.

7. Demographic factors

Factors such as education, years of experience and field of study are likely to be of key importance and we propose that education and experience will both have a positive impact on the use of research in decision making processes and that experience in a relevant study area will enhance that use.

8. Methodology and sample characteristics

A mixed method approach combining quantitative and qualitative methods (Creswell, 2003) was regarded as an appropriate method to explore these hypotheses. In addition, the relationships between scientific research and the decision making process will also be explored by using secondary and primary data. Secondary data was collected by the Department of Statistics, the Ministry of Planning & International Cooperation, the Ministry of Municipal Affairs, and the Jordanian Universities.

The population of this research is defined as all 93 of the Jordanian municipalities (Ministry of Municipal Affairs, 2012). The main survey consisted of 295 questionnaires, of which 16 were mailed to top managers in the Ministry of Municipal Affairs, and 279 were mailed to different municipalities. Each municipality was sent three questionnaires to be given to its President, Municipality Manager, and Development Department Manager. The participants

Stage 1 reception	I Received the university research pertinent to my work
Stage 2 Cognition	I read and understood the university research that I received
Stage 3 Discussion	I participated in meetings for discussion and popularization of the aforementioned university research
Stage 4 Reference	I cited university research studies as references in my own professional reports or documents
Stage 5 Effort	I made efforts to favor the use of university research results
Stage 6 Influence	University research results influenced decisions in my work

were asked to complete the questionnaires, which were collected several days later. The main reason for choosing the entire population is to ensure that the sample is representative and not biased. Of the 295 questionnaires 183 were returned as a usable and complete, yielding a response rate of 62%.

The questionnaire was pre-tested with panel experts and academics to cope with reliability and validity.

9. Measurement of variables

Over the years, many scales have been designed to measure research use in decision making policy (Craik & Rappolt, 2003; Knott & Wildavsky, 1980; and Landry et al., 2001). They propose that research use should be examined at different phases include: reception, cognition, discussion, reference, effort, and influence. These phases are '*meant not only to capture the extent to which information is processed cognitively by the policy-makers but also its consequence in the policy process*' Webber (1991–1992, p. 21). For this research managers were asked to indicate on a 1 to 5 scale (where 1 = never and 5 = always) how accurately each phrase described the use of research for the last five years. Table 1 presents the phrases used in the research.

The independent variables are based on the literature. The centralization variable is based on a study developed by the Centre for Strategic Studies, University of Jordan, and variables such as finance and municipal administration culture are based on the scales adopted from Alnsour and Meaton (2009). The quality of research variable is drawn from scale developed by Alta'ai Mohammad (2012, p. 149), and the variable, self-efficacy is based on ideas presented by Lussier & Hendon (2012) and Bandura (1997).

All the above studies have established the validity and reliability of their instruments. In this study, we use the adapted question items as the instrument to measure the respective constructs below, using a 5-point Likert scale for each item in the first part from the first section in the questionnaire (with 1 = never and 5 = always).

To gain further in-depth information and better understanding about the use of research to support decision making process in municipalities, thirty face-to-face semi-structured interviews were carried out with the top managers, researchers, and professionals working in the municipalities and universities. The interviews were guided by a set of predetermined questions and took place in the respondents' offices and are best described as free-floating conversations guided by question topics. The interviewees were asked to make recommendations about the relationship between decision making and knowledge.

Table 1 describes the characteristics of the questionnaire sample, including gender, age, educational level, scientific field and years of experience.

10. Analysis and discussion

10.1. Research use in the decision making process

Respondents were asked to score the extent to which they use research in their municipalities. Table 2 shows that there was very little use of research in the decision making processes in the Jordanian municipal sector. The survey found that 72% of respondents reported that their departments never use research in making decisions and there were no reports of departments always basing decisions on independent research. However, 10% of respondents confirmed that they rarely use research in their decisions. Only 18% of professionals and managers confirmed that their municipal department sometimes used research and these respondents largely represented municipalities found within the Greater Amman Municipality. According to interviews, a lack of data at both national and local levels encourages decision makers to consider scientific research in their decisions. Importantly, this indicates that the use of research differs from one municipality to another and could be related to the individual characteristics of professionals and managers working in the municipalities, and to the geographic proximity to universities.

The results also found that none of the respondents had ever received university research findings pertinent to their work through formal channels. However, 27% of professionals and managers stated that they did study university research data obtained through their personal contacts. Of that 27%, however, only 8% reported that the research usually influenced their decisions. It can therefore be noted that research is rarely or never used in the decisions made in the municipal milieu.

10.2. Findings from testing the overall hypotheses and interviews

This section presents the descriptive statistics for the research variables and the results of multiple regression analysis and the semi-structured interviews.

10.3. Descriptive statistics for the study variables

Table 3 presents the descriptive statistics for the study variables. The table includes the mean as a measure of central tendency, standard deviation as a measure of spread of distribution, minimum and maximum values, and skewness and kurtosis values to check for normality of each variable. According to Hair, Anderson, Tatham and Black (1998) skewness values within the range of −1 to +1 and kurtosis values within −3 to +3 indicate an acceptable range for normality whereas values falling outside the range of skewness and kurtosis indicate a substantial departure from a normal distribution. Thus, Table 2 shows that skewness and kurtosis values for all variables fall within the acceptable range. Reliability is met by using Cronbach's alpha (α − value). The recommended minimum acceptable level of reliability "alpha" is 0.60 using Hair et al.'s. (1998) criterion. Table 2 shows that the results of Cronbach's alpha have passed and outstripped the minimum level of this test.

Table 2
Top managers' attitudes towards the use of research.

Attitudes	Rank	Percent
Never	1	72
Rarely	2	10
Sometimes	3	18
Often	4	0.0
Always	5	0.0

Table 3
Descriptive statistics for study variables (N = 163).

Research variable	Mean	Std.D	Skewness	Kurtosis	α − value
Centralization	2.69	0.459	0.241	−0.742	0.854
Finance	2.57	0.362	0.530	0.421	0.901
Self-efficacy	2.52	0.548	0.446	−0.148	0.825
Administration culture	2.51	0.784	0.329	0.875	0.837
Quality of research	2.47	0.543	0.416	0.763	0.900
Field of study	3.24	0.678	0.687	−0.356	0.883
Education level	3.31	0.520	0.541	0.417	0.865
Experience years	3.17	0.743	0.589	0.572	0.812

Table 4
Regression analysis for study variables.

Independent variables	Unstandardized coefficients		Standardized coefficients	t-value	Sig.	Tolerance	VIF
	B	Std. Error	Beta				
(Constant)	0.572	0.123	—	3.318	0.002	—	—
Centralization	−0.008	0.052	−0.182	−5.478	0.000	0.328	1.253
Finance	0.071	0.024	−0.121	−3.491	0.001	0.418	2.121
Self-efficacy	0.114	0.041	−0.104	−2.940	0.004	0.674	1.318
Administration culture	0.193	0.057	−0.150	−4.369	0.000	0.724	1.416
Quality of research	0.224	0.036	−0.112	−3.178	0.002	0.563	2.105
Field of Study	0.236	0.047	0.059	0.278	0.146	0.461	1.624
Education level	0.259	0.068	0.076	0.295	0.253	0.553	2.753
Experience years	0.281	0.031	0.089	0.321	0.329	0.347	2.951

$R = 0.587$.
$R^2 = 0.344$.
Adjusted $R^2 = 0.340$.
$F = 65.035$ Sig. 0.000.
$^*P < 0.05$.

11. Multiple regression analysis

Multiple regression analysis was conducted in order to test the research hypotheses. Table 4 shows that R for this model is 0.587, which is an indication that the model provides a good explanation of the observed values of the outcome variable. R^2 is 0.344, which means that the 7 variables included as predictors in the model account for 34.4% of the variation in the use of research in planning decisions. In the case of this model, the value of adjusted R^2 is 0.340, which is perfectly close to R^2. It can be seen from Table 3 that the model causes R to change from zero to 0.587 and this change in the amount of variance explained gives rise to an *F-ratio* of 65.035, which is significant ($P < 0.05$). The variance inflation factor (VIF) showed no values that exceed the generally accepted maximum level of 10 and the tolerance values showed no values less than the maximum level of 0.2. Thus, no support was found for the existence of the multicollinearity problem.

From Table 4, it can be seen that five independent variables including laws, finance, information and technology, human resources and administration culture, are negatively related to the use of university research in the decision making processes. The three other variables included in the model, namely, field of study, education level and experience years were found to be unrelated to the use of research.

The statistics relating to research hypothesis 1 reveal that centralization has a significant impact on the use of research with a beta of −0.182 (t-value = −5.478). Thus, the findings of the regression model indicate that research hypothesis 1, which predicts a negative direct relationship between centralization and the use of research in decision making processes is supported at the 0.05 significance level. Therefore, the hypothesis is fully accepted.

Interviewees argued strongly that municipality law should respond effectively to the various urban challenges, specifically energy and water shortages and issues of poverty and unemployment, exacerbated by the continuing refugee problem. However, although various amendments and revisions of laws relating to the constitution of municipal councils have been made, the most recent dates back to 2002, little has actually changed and it seems the nature of current law impedes the use of independent academic research for decision making. The decision making process is centralized, municipalities are restricted financially and managerially by central government and many municipal decisions must be approved by the Minister of Municipalities. Such centralization therefore makes it very difficult for good quality research to be used sensibly and effectively.

Furthermore municipalities do not allocate sufficient finance for research activities. The statistics relating to research hypothesis 2

reveal that finance has a significant impact on the use of research in decision making process with a beta of −0.121 (t-value = −3.491). Thus, the findings of the regression model indicate that research hypothesis 2, which predicts a negative direct relationship between finance and the use of research is supported at the 0.05 significance level. Therefore, the hypothesis is fully accepted.

Interviews reveal that financial deficiency plays an important role in making random decisions. According to interviewees, some projects are implemented by municipalities without taking into consideration the economic costs and benefits. It can therefore be suggested that decisions made in the absence of research, can in turn, result in significant financial costs.

Results reveal that the human resources in the municipalities indicate low levels of self-efficacy. The statistics relating to research hypothesis 3 reveal that low levels of self-efficacy have a significant impact on the use of research with a beta of −0.104 (t-value = −2.940). Thus, the findings of the regression model indicate that research hypothesis 1, which predicts a negative direct relationship between self-efficacy and the use of research in the decision making process, is supported at the 0.05 significance level. Therefore, the hypothesis is fully accepted.

According to interviewees, this is related to untrained and unskilled human resources in municipalities. Although municipalities conducted several training courses to enhance the quality of their staff, the benefits from these courses were found to be limited. Many interviewees declared that there is a lack of local specialists in planning and attracting experienced staff is an important challenge. A good example that confirms this is the inability of the municipalities to produce master plans without foreign support. Most interviewees agreed that even with well trained and experienced staff, incorporating scientific knowledge in land use policy decisions is a major challenge and will require a change in the culture of the municipalities.

Findings reveal that the municipal administration culture has an important negative influence on the use of research in municipalities' decisions. The statistics relating to research hypothesis 4 reveal that municipal administration culture has a significant impact on the use of research with a beta of −0.150 (t value = −4.369). Thus, the findings of the regression model indicate that research hypothesis 1, which predicts a negative direct relationship between municipal administration culture and the use of research, is supported at the 0.05 significance level. Therefore, the hypothesis is fully accepted.

Quality issues are also important. The statistics relating to research hypothesis 5 reveal that low quality research has a significant impact on the use of research with a beta of −0.112 (t-value = −3.178). Thus, the findings of the regression model indicate that the research hypothesis, which predicts a negative direct

relationship between low quality of research and the use of research in the decision making process is supported at the 0.05 significance level. Therefore, the hypothesis is fully accepted.

Results suggest that the lack of feedback on the research findings, the length of the study, coverage of variables, research inconsistencies and uninteresting research subjects may have a significant impact on the use of research within the municipalities. Most of interviewees pointed out that the methodologies used in some studies are not clear or are inappropriate to the social economic reality. Therefore, decision makers often tend to attract foreign experts to produce local studies.

12. Conclusion and recommendations

Research is an essential instrument for making good quality decisions for municipalities. Integrating research findings into policy processes will require the use of tools that enable municipalities to communicate effectively about the nature of the decisions, the available information, and the various considerations that need to be incorporated into the decision-making process.

Despite the general aim of the municipalities to ensure that planning issues are managed soundly, current decisions are made in the absence of any quality research and are often found to be too rigid and consequently unable to deal with the complexities of the environment in Jordan. Legal, administrative, financial, human, social and information and technological challenges conspire to minimize the amount of attention given to research when making planning decisions. While municipalities continue to make their decisions without research input, it is difficult to organize the economic, social and physical aspects of planning required to make effective policy decisions. As a result municipalities are compromised in their role of managing land use.

Further research should focus on other variables which might impact on research use in municipalities, such as size of municipalities and distance between municipalities and universities, and the relationships between academics, researchers and practitioners.

This paper has identified a series of practical recommendations that could mitigate these problems:

- Restructuring the current municipal system in Jordan is an essential and missing component of on-going reform efforts. Such restructuring will have to ensure an appropriate level of decentralization, an improved capacity of municipal administration and an effective policy and performance monitoring system.
- Utilizing the findings of this research can help municipalities make sense of their ability to cope with planning challenges from an empirical factual perspective. Therefore, municipalities should reassess their current institutional capacity in terms of finance, human resources and technology.
- Municipalities should proactively engage with empirical research. Future research should be conducted within the country by national experts. One part of this process would be the establishment of joint research centers with academics and universities.
- Linking decision making to empirical research findings should be fundamental to the management and planning of the Jordanian environment. This can be assisted by reassessing and amending the current laws so that more attention is paid to research and knowledge. Increasing the budget for research will be a key to this and will incentivize greater research activity.
- Practical training programs aimed at enhancing the efficiency of human resources should be introduced, practiced and evaluated.

- The Municipalities Law should be amended so that specific qualifications are required before any municipal councilors can be elected for office.

This is the first Jordanian study to examine empirically the relationship between the use of university research and planning decision making processes. Further research should produce more empirical studies about the overall need for research and knowledge for different urban sectors including housing, agriculture, transport, tourism, and other public services. Further research should measure the relationship between decision making policy and research policy in other developing countries, where comparative studies can enrich knowledge and generate new ideas.

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