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Characteristics of innovation and the diffusion of benchmarking

Abstract

The adoption and diffusion of benchmarking is relatively addressed in Western countries. However, there is scant evidence on how benchmarking is received by organizations in developing countries. Additionally, while the diffusion of innovation theory suggests the significance influence of characteristics of an innovation on its adoption and diffusion, no study has been reported to examine this theory in relation to benchmarking. Furthermore, almost all surveys on the adoption of benchmarking have considered benchmarking as a practice rather than a process.

Contributing to these gaps in the literature, this study provides evidence on the adoption of and diffusion of benchmarking in Sultanate of Oman (as a developing country) and examines the significance of impact of characteristics of innovation on the adoption and diffusion of benchmarking (both as a practice and a process).

Making a distinction between the adoption of benchmarking as a practice and a process, this study explains some of the variations in reported adoption rates for benchmarking in the literature.

Keywords: benchmarking, innovation characteristics, the diffusion of innovation and economic theory.

JEL Classification: M41.

Introduction

The advantages, diffusion and adoption of benchmarking is adequately addressed in Western countries (1-9). The overall assessment is that benchmarking can contribute to the organizational performance by learning from the best practices and processes available in the market (outside your own organization, company, industry, region or country) for the best performance (1-5). However, there is scant evidence on how benchmarking is received by organizations in developing countries.

According to benchmarking literature, the growing level of global competitions have intensified the challenges for managers to consider more effective ways of achieving competitive advantages and improved organizational performances for the survival of their organizations during the past two decades (10-12). This would highlight the importance of diffusion and adoption of benchmarking and would lead to the expectation of wider adoption of benchmarking in practice. However, there is some evidence in the literature which suggests otherwise (13-15). This would raise an important question: what contextual factors may have been influencing the adoption of benchmarking in practice?

According to economic theory (8), organizations are more likely to adopt a new technique (innovation) if it adds value to the organization and/or improves organization performance (e.g. added value, profit, quality, etc.). In other words, innovation's specifications (e.g. its relative advantages over the current practice, its costs, its complexity, etc.) are determining factors which are supposed to be evaluated under the economic theory. These determining factors are called 'characteristics of

innovation' under the diffusion of innovation theory (16, 17). According to the diffusion of innovation theory, characteristics of innovation/s are likely to have a significant impact on the adoption and diffusion of innovation/s. However, no study has been reported to examine this theory in relation to benchmarking. Contributing to this gap in the literature, current study provides evidence on the adoption and diffusion of benchmarking in Sultanate of Oman (as a developing country) and examines the significance of impact of characteristics of innovation on the adoption and diffusion of benchmarking.

The remainder of the paper is structured as follows. Section 1 presents the literature review, followed by the research methodology (section 2). The findings are revealed in section 3. Final section presents discussion, implications, and conclusions

1. Literature review

This section first presents a background on benchmarking. Then it discusses the diffusion and adoption of benchmarking from the lens of diffusion of innovation and economic theories. Deriving from the diffusion of innovation theory, it finally introduces a list the characteristic of innovations as potential influencing factors for investigation in the current study.

1.1. An overview on the themes of best practice benchmarking in the literature. Benchmarking is about adoption of best practices that lead to superior performance (7). According to benchmarking literature, the growing level of global competitions have intensified the challenges for managers to consider more effective ways of achieving competitive advantages and improved organizational performances for the survival of their organizations during the past two decades (10-12,

18-22). This has highlighted the importance of adoption of benchmarking technique as a means of achieving the above goals in organizations (2, 4, 23-25). Benchmarking is a practical tool, that can improve organizational performance by learning from the best practices and processes available in the market. Benchmarking involves looking outwards (outside your own organization, company, industry, region or country) for the best performance (1-5, 19-22). It also demands to investigate how others achieve their performance levels and to understand the processes they use (26-28). Benchmarking includes both technical and administrative techniques and practices. It can help to explain the processes behind excellent performances. When the lessons learnt from a benchmarking exercise are applied appropriately, they facilitate improved performances in critical functions within an organization (29-31).

Benchmarking is a systematic and continuous measurement process; a process of continuously measuring and comparing an organization's business process and practices against the best business process and practices in the world to gain information which would help the organization to take appropriate action to improve its performance (18, 32-39). Confirming the above view, Auh & Menguc (40) suggest that through the diffusion and adoption of best practices and benchmarking, organizations may accelerate their homogeneities and performances.

While learning from others and trying to adopt the best behavior, activity or practice doesn't seem to be a new phenomenon (and could be started from birth such as acquiring language by children), according to Menachof & Wassenberg (41), the formal adoption of benchmarking technique (as it is known today) was a relatively unknown and uncommon practice until the late 1980s. According to Hurmelinna et al. (42), benchmarking for best practices was first implemented by Rank Xerox in 1979. Following Rank Xerox, Menachof & Wassenberg (41) identified insurance companies and U.S. offshoots such as Digital Equipment Company as the first companies in Europe that adopted benchmarking, followed by some other European firms such as Shell, Rover and British Telecom.

In copying with the growing level of global competitions and achieving more competitive advantages, organizations always need to be aware of the best available practices and processes used by other players in the global market, especially by their competitors (26, 43, 44). This is why the diffusion and adoption of benchmarking is very important. Benchmarking has an orientation towards the organization's environment such as suppliers,

customers, and its competitive position relative to both existing and potential competitors. It is a continuous process which focuses on analyzing existing processes and practices and comparing them with the best available ones in the market with an ongoing recognition of rivalry with competitors. According to Akdeniz et al. (26), benchmarking can offer a basis for sustainable competitive advantages in organizations. As said by Bowerman et al. (6, p. 323), "benchmarking is not a new tool, but rather a modern name for what is a well-established local authority practice of external, audit-driven, performance measurement and monitoring." So, from this perspective, benchmarking can be considered as a process which involves a number of steps.

Considering benchmarking as a process, different authors have suggested different sequences of activities for benchmarking (26). However, according to Fong, Shen & Cheng (45), the most common activities in the process of adoption of benchmarking can be summarized into four basic steps: (1) understanding your own processes in details; (2) analyzing the processes of others; (3) comparing your own performance with that of others analyzed and identifying the best practice; (4) implementing the steps necessary to close the performance gap.

It is necessary to mention that almost all studies on the diffusion and adoption of benchmarking have considered this technique as a practice rather than a process. In other words, they have mainly focused on adoption of benchmarking (adoption versus non-adoption) and failed to identify the stage/steps of adoption as a process which involves the above 4 steps.

However, despite overall advantages of benchmarking, the adoption of this technique is not widely experienced by many firms in practice (13-15). For example, Askarany and Smith (46) found that only 35% of Australian firms were using benchmarking. In another study, France (47) surveyed 355 management accountants in Australia and New Zealand. The purpose of his study was to identify the frequencies of using managerial techniques by managers in their jobs descriptions. Out of the 335 respondents in the targeted sample, 325 indicated their locations: 29 (8.9%) from New Zealand and 296 (91%) from Australia. His study ranks the frequency of using benchmarking in Australia and New Zealand as 14th (compared with other adopted managerial techniques) with only 5% using rate. Nevertheless, these findings are not in line with Beretta, Dossi, Grove & Obremsky's (15) suggestion which implies 'benchmarking is entering a phase of vast diffusion among companies'. This would raise an important question: what contextual factors may have been influencing the adoption of benchmarking in practice?

Van Helden & Tillema (8, p. 338) use both economic and institutional reasoning in order to provide a comprehensive theoretical explanation for the adoption and diffusion of benchmarking. Their selection of economic reasoning is due to the main goal and objective of benchmarking and its focus on effectiveness and efficiency, which are closely related to the performance improvement goal of benchmarking. Their selection of institutional reasoning which is derived from neo-institutional and resource dependence theories is due to the impact of institutional factors (e.g. rules and regulations, values and traditions, etc.) on the adoption and diffusion of benchmarking. They believe that both economic and institutional reasoning view benchmarking as a mechanism for economic legitimacy and the latter, however, also pays attention to its impact on the social legitimacy of organizations. Finally, they state that these two theoretical angles (economic and institutional theories) can provide similar as well as complementary explanations for the adoption and diffusion of benchmarking.

Both economic and institutional theories are supported by the diffusion of innovation theory. According to the diffusion of innovation theory (16, 17), the adoption and diffusion of an innovation can be influenced by 'characteristics of innovation' in terms of its relative advantages (economic theory) and 'characteristics of adopters' (institutional theory).

1.2. The diffusion of innovation theory. Rogers (16) defines diffusion as a process by which an innovation is communicated and disseminated through certain channels through time among the members of a social system. He maintains that for diffusion to take place the following must exist. First, there must be an idea or innovation to be diffused. Second, there must be a population of potential adopters for the innovation. Third, there must be communication flows between the innovation's developers and potential adopters. This then should be followed by adoption of innovations by adopters.

According to Rogers (16), an innovation is as 'an idea, practice, or object that is perceived as new by an individual or other unit of adoption'. He suggests that if the individual has no perceived knowledge about an idea and sees it as new, it is an innovation. Likewise, Damanpour and Gopalakrishnan (48) define innovation as 'the adoption of an idea or behavior new to the organization'. The common criterion in any definition of innovation is newness.

Wolfe (49) explains the diffusion of an innovation as a way the new ideas are accepted (or not) by

those to whom they are relevant. Rogers (16) extends this definition to consider diffusion as a process by which an innovation is communicated through certain channels over time among the members of a social system. The members of a social system could be organizations, societal sectors or nations.

According to Rogers (16), newness in an innovation might be expressed not only in terms of new knowledge, but also in terms of the first persuasion, or a decision to adopt. So, innovation can be related to both new administrative techniques and services and new technological changes and products. Given the above definitions, we can consider benchmarking as an innovation and investigate its adoption in line with the diffusion of innovation theory.

The diffusion of an innovation in a particular population is usually measured by its rate of implementation. According to Brown (50), diffusion rates are often measured in terms of the proportion of firms using a new technique (an innovation) as compared with those using the old ones. Rogers (51) defines the rate of adoption as the relative speed of adoption of an innovation by its potential adopters. He explains the rate of adoption as a numerical indicator which is generally measured by the number of adopters who adopt an innovation during a specified period of time.

According to the diffusion of innovation theory, a variety of contextual factors could influence the diffusion of innovations (52-61) and some of those factors have been examined in the literature. For example, Chan and Chan (62) investigate the effect of information sharing on the adoption of supply chains. Wang, Heng et al. (58) address the effects of several more contextual factors on the diffusion of innovations as follows: firm's governance capability, organizational capability, firm's competitive pressure, social embeddedness among the network participants, maturity of innovation. There are also some studies on the impact of other influential factors such as 'change champion' (63), 'outside agency' (64), globalization and liberalization (65), and 'secondary diffusion' (66) on the diffusion of strategic management innovations. According to Hughes et al. (67), organizational factors such as 'centralization', 'formalization', and 'resource scarcity' can influence the adoption of organizational performance systems.

However, despite the important impact of characteristics of innovation on its diffusion in the literature (16, 17), no study has been reported to examine the significant impact of these contextual factors on the diffusion of benchmarking in practice.

This represents a significant gap in the literature which current study is aiming to address.

In order to measure the attributes of innovations, Moore and Benbasat (68) have developed a set of general scale items. Testing almost all introduced instruments (in the field of characteristics of innovations), Moore & Benbasat (1991) prepared a refined instrument to measure different characteristics of innovations. After conducting several surveys and performing a number of statistical tests, they concluded that their instrument has high validity and reliability and is appropriate to be used in most diffusion studies. According to Moore & Benbasat (68), characteristics of innovations can be measured by the following items:

- ◆ Its ability to get the job/service done quicker;
- ◆ Its ability to improve the quality of the job/service;
- ◆ Its ability to do the job/service easier;
- ◆ Its ability to increase the overall effectiveness of the job/service;
- ◆ Its ability to offer greater control over work processes (job/service);
- ◆ Being compatible with all aspects of existing processes (job/service);
- ◆ Fitting well with the way I/organization like to work;
- ◆ Fitting into my/organization work style;
- ◆ Being easy to learn how to operate ;
- ◆ Offering clear and understandable interaction with the technique;
- ◆ Being easy to use/implement;
- ◆ Being easy to get the technique to do what I/organization want it to do;
- ◆ Having no difficulty telling others about the results of using the technique;
- ◆ Being able to communicate to others the consequence of using the technique;
- ◆ Being able to see the results of using the technique clearly;
- ◆ Being able to explain why using the technique may or may not be beneficial;
- ◆ Being able to try the technique before deciding to implement it (or not);
- ◆ Being allowed to use the technique on a trial basis long enough to see what it could do.

Deriving from diffusion of innovation theory and adopting Moore and Benbasat's (68) developed instrument, this study investigates the adoption and diffusion of benchmarking in Sultanate of Oman (as a developing country) and examines the significance of association between innovation characteristics and the adoption and diffusion of benchmarking (both as a practice and as a process). So, we may propose that there is a significant association

between the diffusion of benchmarking as a *practice* and all above characteristics of innovation.

Furthermore, almost all surveys on the adoption of benchmarking have considered benchmarking as a practice rather than a process (46, 47). In other words, reported adoption rates for benchmarking just discuss the overall adoption (adoption versus non-adoption) of the technique and do not show the stage/s (4 stages of benchmarking addressed earlier in this section) of the adoption of the technique as specified in the literature (45). So, we may propose that there is a significant association between the *stages* of the diffusion of benchmarking as a *process* and all above characteristics of innovation.

2. Research method

Data used for this study are gathered through a survey questionnaire and a follow-up interview in Sultanate of Oman. Following some investigation and inquiries, the author/s understood that there is a governmental body in the Sultanate of Oman called 'Oman Chamber of Commerce and Industry' (OCCI) which looks after all organizations in the country. According to the Sultanate of Oman law and regulations, membership to OCCI is mandatory for all business establishments in the country.

After visiting the Sultanate of Oman and some networking, the author received detailed information of all registered organizations in the country. According to the provided information by OCCI, the total number of registered organizations in the Sultanate of Oman was 167,960 by the beginning of 2011. As shown by OCCI classification, the total number of organizations which had a capital value of 250,000 Omani Riyals (one Riyal was just over \$US2.5 at the time of investigation in 2011) and more was 3427. Also the total number of international organizations working in the country was 439 in 2011.

Following some further investigation and negotiation with a number of academics, professionals and practitioners in the Sultanate of Oman, it was concluded that the majority of organizations with a capital value of less than 250,000 Riyals (such as small shops and family businesses) are less likely to have a proper accounting systems or a performance measurement technique such as benchmarking.

Given the above, it was decided that the most appropriate approach would be to select our targeted sample from organizations which had a capital value of 250,000 Omani Riyals and more (3427 organizations) as well as from international

organizations working in the country (439 organizations which were also large). Considering the budget and time constraints, 20% of the targeted populations ((3427+439)*20% = 774) were selected (by using a random sampling method). So, a survey questionnaire was mailed to accountants/management accountants of 774 organizations in the Sultanate of Oman in June 2011. The selection of accountants/management accountants was due to the fact that these people have a good knowledge of almost all managerial techniques (including benchmarking) implemented in organizations.

The survey questionnaire was designed to examine the extent of diffusion of benchmarking in organizations as well as to gather information on the level of association between a list of innovation characteristics (18 items listed in this paper earlier) and the adoption of benchmarking in practice.

To examine the extent of diffusion of benchmarking as a *practice*, respondents were asked to identify the adoption of benchmarking by using a 5-point Likert-type scale (69, 70) as follows: with anchors of 1 “discussions have not taken place regarding the introduction of the technique”; 2 “a decision has been taken not to introduce the technique”; 3 “some consideration is being given to the introduction of the technique in the future”; 4 “the technique has been introduced on a trial basis”; and 5 “the technique has been implemented and accepted”.

To examine the level of the adoption of benchmarking as a *process*, respondents were asked to identify the stage/level of adoption of benchmarking based on Fong, Shen & Cheng's (45) 4 sequences of activity levels in following orders: (1) understanding your own processes in details; (2) analyzing the processes of others; (3) comparing your own performance with that of others analyzed and identifying the best practice; (4) implementing the steps necessary to close the performance gap.

To examine the level of association between innovation characteristics and the adoption of benchmarking in practice, respondents were asked to identify the level of importance of the influence of innovation characteristics (18 items listed before) on their decisions to adopt benchmarking based on following scale: very important = 1; important = 2; neutral = 3; not very important = 4; irrelevant = 5.

Pilot tests of the instrument were initially undertaken with a group of university academics and managers. Before the survey instrument was mailed to the organizations under investigation, its content validity was addressed by asking a group of managers, lecturers and postgraduate students with managerial experience to review the instrument for

clarity and meaning and to refine the design and focus of the content further. Modifications were made as deemed necessary. To help motivate response, respondents were offered a final report of the results together with the resulting recommendations. Hard copies of the questionnaires were sent to the targeted populations in the first week of June 2011 followed by a reminder letter (with another copy of the survey) after three weeks.

The surveys were also proceeded by follow-up interviews (face-to-face and over the phone) after conducting the initial analyses of data, to improve our understanding of the nature of adoption of benchmarking in organizations and to clarify some of the issues raised in responses to open ended questions. The interviewees were those respondents who had expressed their interests in participating in an interview by checking a box in the questionnaire and providing the researcher/s with their contact details. Consequently, we conducted 14 interviews (face to face and over the phone). All interviews (except two) lasted between 1 and 2 hours. These were also followed-up by some telephones and emails to clarify some issues arising from the interview analysis. All interviews (except one) were tape recorded, and then transcribed. However, interviewees were assured beforehand that the taping was aimed entirely at enhancing the research process, and confidentiality was assured both externally and internally.

3. Findings

A total of 116 completed questionnaires were received (plus 261 not-completed or not delivered), providing a satisfactory response rate of 22.6% (71-73). According to Krumwiede (74), the normal response rate for these kinds of surveys is approximately 20% though there are many published surveys with lower response rates such as 12.5%.

Non-response bias was examined both by using the aggregated data provided by OCCI (such business type, capital value, etc.) and comparing them with similar information gathered by the survey, and through a comparison between early and late responses. The former showed responses to be representative, the latter that there was no perceived difference between these responses, suggesting that non-response bias would not influence the outcomes.

The survey questionnaire was designed to examine the extent of the diffusion of benchmarking in organizations as well as to gather information on the level of association between characteristics of innovation and the adoption of benchmarking in practice. Table 1 shows the extent of diffusion of benchmarking as a *practice*. According to Table 1,

32.8% of organizations have adopted and accepted benchmarking as a practice. A further 11.2% of organizations have implemented benchmarking on a trial basis (but not accepted it yet). However, these

findings show that the majority of organizations are not using benchmarking in practice as the percentage of non-adopters is more than those which have adopted and accepted the benchmarking.

Table 1. The adoption of benchmarking as a practice

No discussion	Decided not to introduce	Some consideration is given	Introduced on trial basis	Implemented and accepted	Total
35	4	26	13	38	116
30.2%	3.4%	22.4%	11.2%	32.8%	100%

Table 2 shows the level of the adoption of benchmarking as a *process* based on Fong, Shen & Cheng's (45) 4 sequences of activity levels in following orders: (1) understanding your own processes and identification of critical success areas; (2) analyzing the processes of others; (3) comparing your own performance with that of others analyzed and identifying the best practice; (4) implementing the steps necessary to close the performance gap. According to Table 2, only 19.84% of organizations

have proceeded with the full adoption of the technique (implementing all four stages). This explains part of inconsistent results (on different adoption rates for benchmarking) in the literature and can be considered as an important contribution to the literature. In other words, this study suggests that some of high adoption rates reported in the literature (e.g. 75) may just refer to adopters of earlier stages of benchmarking but not to the adopters of all four stages of the technique as shown in this study.

Table 2. The adoption of benchmarking as a process

Stages of adoption of benchmarking	Numbers	Percent
(1) Understanding your own processes and identification of critical success areas	9	7.8%
(2) Analyzing the processes of others	10	8.6%
(3) Comparing your own performance with that of others analyzed and identifying the best practice	14	12.1%
(4) Implementing the steps necessary to close the performance gap review, feedback and learning, as well as making adjustments to the strategy	23	19.8%
Not relevant (not adopted)	60	51.7
Total	116	100%

Table 3 examines the level of associations between characteristics of innovation and the adoption of benchmarking both as a practice and a process. According to Table 3, the findings show no significant

association between characteristics of innovation and the adoption of benchmarking neither as a *practice* nor as a *process* in the Sultanate of Oman (as an example of developing countries).

Table 3. The significance of association between innovation characteristics and the adoption of benchmarking both as a practice and a process (at 95% confidence level)

Characteristics of innovation	Benchmarking as a practice	Benchmarking as a process
Its ability to get the job/service done quicker	0.128	0.380
Its ability to improve the quality of the job/service	0.665	0.743
Its ability to do the job/service easier	0.779	0.530
Its ability to increase the overall effectiveness of the job/service	0.779	0.779
Its ability to offer greater control over work processes (job/service)	0.438	0.890
Being compatible with all aspects of existing processes (job/service)	0.206	0.940
Fitting well with the way I/organization like to work	0.640	0.566
Fitting into my/organization work style	0.378	0.074
Being easy to learn how to operate	0.781	0.572
Offering clear and understandable interaction with the technique	0.846	0.268
Being easy to use/implement	0.793	0.352
Being easy to get the technique to do what I/organization want it to do	0.500	0.937
Having no difficulty telling others about the results of using the technique	0.667	0.837
Being able to communicate to others the consequence of using the technique	0.763	0.942
Being able to see the results of using the technique clearly	0.506	0.693
Being able to explain why using the technique may or may not be beneficial	0.895	0.992
Being able to try the technique before deciding to implement it (or not)	0.087	0.338
Being allowed to use the technique on a trial basis long enough to see what it could do	0.786	0.281

The diffusion of innovation theory (16) suggests that innovation characteristics can have a significant influence on adoption and diffusion of innovations. However, as with some of the extant literature (64, 76, 77), current study reveals that the diffusion of certain innovations (such as benchmarking in our study) in certain environment and situations (such as those in developing countries-case of Oman in our study) might follow other ideologies such as fad fashion philosophy (e.g. 64, 76, 77) or institutional theory (e.g. 8). Further studies are recommended to investigate the influence of other contextual factors such as organizational factors and factors external to the organizations on the adoption and diffusion of benchmarking in developing countries.

Discussion, implications and conclusions

There is scant evidence on how benchmarking is received by organizations in developing countries. Furthermore, almost all surveys on the adoption of benchmarking have considered benchmarking as a practice rather than a process. This study contributes to the literature by providing evidence on the adoption and the diffusion of benchmarking (both as a practice and a process) in Sultanate of Oman (as an example of developing countries).

According to the findings, 32.8% of organizations have adopted and accepted benchmarking as a practice. A further 11.2% of organizations have implemented benchmarking on a trial basis (but not accepted it). Examining the adoption of benchmarking as a process, the findings show that only 19.8% of organizations have proceeded with the full adoption of the technique (implementing all four stages of benchmarking addressed in this study). These findings show that the adoption and diffusion of benchmarking in Oman is not very popular as the majority of organizations are not using benchmarking in practice. So the findings may imply that further studies are needed to identify the reason/s behind the slow adoption and diffusion of benchmarking in developing countries.

These results contribute to the literature by explaining part of inconsistent results (on reporting different adoption rates for benchmarking in the literature) by making a distinction between the adoption of benchmarking as a practice and a process and finding different adoption rates for each adoption method (practice versus process) in a single study. In other words, this study suggests that some of high adoption rates reported in the literature

may just refer to adopters of earlier stages of benchmarking but not to the adopters of all four stages of the technique as discussed in this study.

This study further contributes to the literature by examining the significance of association between characteristics of innovation on the one hand and the adoption of benchmarking as a practice and process on the other hand. According to the findings, this study provides no evidence to support the significance of innovation characteristics on adoption and diffusion of benchmarking in developing countries such as Oman. While the diffusion of innovation theory suggests that innovation characteristics could have a significant influence on adoption and diffusion of innovations, current study suggests that the diffusion of certain innovations (such as benchmarking in our study) in particular environment and situations (such as developing countries-case of Oman in our study) could follow other ideologies (e.g. fad fashion philosophy or institutional theory) rather than the diffusion of innovation theory. Further studies are recommended to investigate the influence of other contextual factors such as organizational factors and factors external to the organizations on the adoption and diffusion of benchmarking in developing countries.

As with any survey, this study is subject to some limitations. Given that the respondents were mostly accountants/management accountants, this may thus exhibit a bias toward reporting the adoption of benchmarking in organizations. Another limitation relates to the selection of targeted population for this study. According to OCCI, the total number of registered organizations in the Sultanate of Oman was 167,960 by the beginning of 2011. However, after some investigation and negotiation with a number of academics, professionals and practitioners in the Sultanate of Oman, it was suggested that the majority of organizations with a capital value of less than 250,000 Riyals (such as small shops and family businesses) are less likely to have a proper accounting systems or necessary knowledge about benchmarking. So, it was decided that the most appropriate approach would be to select our targeted sample from organizations which had a capital value of 250,000 Omani Riyals and more (3427 organizations) as well as on international organizations working in the country (439 organizations). Thus, generalizing the results of this study to other organizations should be done with caution.

References

1. Arbel, A., Seidmann, A. (1985). Capacity planning, benchmarking and evaluation of small computer systems, *European Journal of Operational Research*, 22 (3), pp. 347-358.
2. Lioui, A., Poncet P. (2013). Optimal benchmarking for active portfolio managers, *European Journal of Operational Research*, 226 (2), pp. 268-276.

3. Post, T., Spronk, J. (1999). Performance benchmarking using interactive data envelopment analysis, *European Journal of Operational Research*, 115 (3), pp. 472-487.
4. Sedeño-Noda, A., González-Dávila, E., González-Martín, C., González-Yanes, A. (2009). Preemptive benchmarking problem: An approach for official statistics in small areas, *European Journal of Operational Research*, 196 (1), pp. 360-369.
5. Wu, J., Liang, L., Yang, F. (2009). Achievement and benchmarking of countries at the summer olympics using cross efficiency evaluation method, *European Journal of Operational Research*, 197 (2), pp. 722-730.
6. Bowerman, M., Ball, A., Francis, G. (2001). Benchmarking as a tool for the modernisation of local government, *Financial Accountability & Management*, 17 (4), pp. 0267-4424.
7. Jones, C.S. (2002). The attitudes of British national health service managers and clinicians towards the introduction of benchmarking, *Financial Accountability & Management*, 18 (2), pp. 0267-4424.
8. Van Helden, G.J., Tillema, S. (2005). In search of a benchmarking theory for the public sector, *Financial Accountability & Management*, 21 (3), pp. 0267-4424.
9. Arnaboldi, M., Azzone, G. (2004). Benchmarking university activities: An italian case study, *Financial Accountability & Management*, 20 (2), pp. 205-220.
10. Alexander, D. (1999). A benchmark for the adequacy of published financial statements, *Accounting and Business Research*, 29 (3).
11. Roslender, R. (1995). Accounting for strategic positioning: Responding to the crisis in management accounting, *British Journal of Management*, 6 (1), pp. 45-57.
12. Rainsbury, E.A., Bradbury, M.E., Cahan, S.F. (2008). Firm characteristics and audit committees complying with 'best practice' membership guidelines, *Accounting and Business Research*, 38 (5).
13. Askarany, D., Yazdifar, H. (2010). A comparative investigation into the diffusion of management accounting innovations in the UK, Australia and New Zealand, *Chartered Institute of Management Accountants (CIMA)*, 5 (9), pp. 1-11.
14. Askarany, D., Smith, M. (2004). Contextual factors and administrative changes, *Issues in Informing Science and Information Technology Journal*, 1, pp. 179-188.
15. Beretta, S., Dossi, A., Grove, H., Obremsky, T. (1998). Benchmarking: Beyond comparing performance to identifying best practices, *International Journal of Strategic Cost Management*, 2 (2), pp. 35-49.
16. Rogers, E.M. (2003). *Diffusion of innovations*, New York, Free Press.
17. Askarany, D. (2009). Innovation generation and innovation adoption. In: Khosrow-Pour M, editor. *Encyclopedia of information science and technology*. Hershey: IDEA Group Publishing, pp. 2048-2054.
18. Francis, G., Holloway, J. (2007). What have we learned? Themes from the literature on best-practice benchmarking, *International Journal of Management Reviews*, 9 (3), pp. 171-189.
19. Adler, N., Liebert, V., Yazhensky, E. (2013). Benchmarking airports from a managerial perspective, *Omega*, 41 (2), pp. 442-458.
20. Avkiran, N.K., Morita, H. (2010). Benchmarking firm performance from a multiple-stakeholder perspective with an application to Chinese banking, *Omega*, 38 (6), pp. 501-508.
21. Bell, R.A., Morey, R.C. (1994). The search for appropriate benchmarking partners: A macro approach and application to corporate travel management, *Omega*, 22 (5), pp. 477-490.
22. Stewart, T.J. (2010). Goal directed benchmarking for organizational efficiency, *Omega*, 38 (6), pp. 534-539.
23. Augusto, M., Lisboa, J., Yasin, M., Figueira, J.R. (2008). Benchmarking in a multiple criteria performance context: An application and a conceptual framework, *European Journal of Operational Research*, 184 (1), pp. 244-254.
24. Grigoroudis, E., Litos, C., Moustakis, V.A., Politis, Y., Tsironis, L. (2008). The assessment of user-perceived web quality: Application of a satisfaction benchmarking approach, *European Journal of Operational Research*, 187 (3), pp. 1346-1357.
25. Hung, S.-W., Lu, W.-M., Wang, T.-P. (2010). Benchmarking the operating efficiency of asia container ports, *European Journal of Operational Research*, 203 (3), pp. 706-713.
26. Akdeniz, M.B., Gonzalez-Padron, T., Calantone, R.J. (2010). An integrated marketing capability benchmarking approach to dealer performance through parametric and nonparametric analyses, *Industrial Marketing Management*, 39 (1), pp. 150-160.
27. Balakrishnan, S. (1996). Benefits of customer and competitive orientations in industrial markets, *Industrial Marketing Management*, 25 (4), pp. 257-269.
28. Brownlie, D. (1996). The conduct of marketing audits: A critical review and commentary, *Industrial Marketing Management*, 25 (1), pp. 11-22.
29. Claycomb, C., Germain, R., Drge, C. (2000). The effects of formal strategic marketing planning on the industrial firm's configuration, structure, exchange patterns, and performance, *Industrial Marketing Management*, 29 (3), pp. 219-234.
30. Cooper, R.G. (1996). Overhauling the new product process, *Industrial Marketing Management*, 25 (6), pp. 465-482.
31. Kortge, G.D., Okonkwo, P.A., Burley, J.R., Kortge, J.D. (1994). Linking experience, product life cycle, and learning curves: Calculating the perceived value price range, *Industrial Marketing Management*, 23 (3), pp. 221-228.
32. Horngren, T., Datar, S.M., Rajan, M.V. (2012). *Cost accounting a managerial emphasis*, Essex, England, Pearson.

33. Schmidberger, S., Bals, L., Hartmann, E., Jahns, C. (2009). Ground handling services at European hub airports: Development of a performance measurement system for benchmarking, *International Journal of Production Economics*, 117 (1), pp. 104-116.
34. Schefczyk, M. (1993). Industrial benchmarking: A case study of performance analysis techniques, *International Journal of Production Economics*, 32 (1), pp. 1-11.
35. Parast, M.M., Adams, S.G. (2012). Corporate social responsibility, benchmarking, and organizational performance in the petroleum industry: A quality management perspective, *International Journal of Production Economics*, 139 (2), pp. 447-458.
36. Baesens, B., Gestel, T.V., Viaene, S., Stepanova, M., Suykens, J., Vanthienen, J. (2003). Benchmarking state-of-the-art classification algorithms for credit scoring, *The Journal of the Operational Research Society*, 54 (6), pp. 627-635.
37. Castermans, G., Martens, D., Gestel, T.V., Hamers, B., Baesens, B. (2010). An overview and framework for pd backtesting and benchmarking, *The Journal of the Operational Research Society*, 61 (3), pp. 359-373.
38. Francis, G., Holloway, J. (2002). Beyond comparisons-the role for the operational researcher in benchmarking, *The Journal of the Operational Research Society*, 53 (3), pp. 283-291.
39. Nicholls, M.G. (2009). The use of markov models as an aid to the evaluation, planning and benchmarking of doctoral programs, *The Journal of the Operational Research Society*, 60 (9), pp. 1183-1190.
40. Auh S., Menguc, B. (2009). Broadening the scope of the resource-based view in marketing: The contingency role of institutional factors, *Industrial Marketing Management*, 38 (7), pp. 757-768.
41. Menachof, D., Wassenberg, O. (2000). The application of benchmarking techniques by road transport companies in the united kingdom and the netherlands, *Transportation Journal*, 40 (2), p. 17.
42. Hurmelinna, P., Peltola, S., Tuimala, J., Virolainen, V.-M. (2002). Attaining world-class R&D by benchmarking buyer-supplier relationships, *International Journal of Production Economics*, 80 (1), pp. 39-47.
43. Moller, K.E.K., Torronen, P. (2003). Business suppliers' value creation potential: A capability-based analysis, *Industrial Marketing Management*, 32 (2), pp. 109-118.
44. Nath, P., Nachiappan, S., Ramanathan, R. (2010). The impact of marketing capability, operations capability and diversification strategy on performance: A resource-based view, *Industrial Marketing Management*, 39 (2), pp. 317-329.
45. Fong, P.S.-W., Shen, Q., Cheng, E.W.L. (2001). A framework for benchmarking the value management process, *Benchmarking: An International Journal*, 28 (4), p. 11.
46. Askarany, D., Smith, M. (2003). Relationship between the implementation of six management accounting innovations and business size. Global Business and Technology Association (GBATA). Budapest, Hungary.
47. France, A. (2006). An alternative approach to surveying management accounting practices. ICAFT Adelaide: University of South Australia.
48. Damanpour, F., Gopalakrishnan, S. (1998). Theories of organizational structure and innovation adoption: The role of environmental change, *Journal of Engineering and Technology Management*, 15 (1), pp. 1-24.
49. Wolfe, R.A. (1994). Organizational innovation: Review, critique and suggested research directions, *Journal of Management Studies*, 31 (3), pp. 405-431.
50. Brown, L.A. (1981). *Innovation diffusion: A new perspective*, New York, Methuen.
51. Rogers, E.M. (1995). *Diffusion of innovation*, New York, Free Press.
52. Dav, R.L., Herbig, P.A. (1990). How the diffusion of industrial innovations is different from new retail products, *Industrial Marketing Management*, 19, pp. 261-266.
53. Kim, K., Srivastava, R.K. (1998). Managing intraorganizational diffusion of technological innovations, *Industrial Marketing Management*, 27 (3), pp. 229-246.
54. Rabina, S. (1983). Influencing the adoption of an innovation, *Industrial Marketing Management*, 12, pp. 233-241.
55. Trondsen, T.J. (1996). Adopters of a major innovation in the computer field and its potential use in marketing, *Industrial Marketing Management*, 25, pp. 567-576.
56. Tellis, G.J. (2008). Important research questions in technology and innovation, *Industrial Marketing Management*, 37, pp. 629-632.
57. Choi, H., Kim, S.H., Lee, J. (2010). Role of network structure and network effects in diffusion of innovations, *Industrial Marketing Management*, 39 (1), pp. 170-177.
58. Wang, W.Y.C., Heng, M.S.H., Chau, P.Y.K. (2010). The adoption behaviour of information technology industry in increasing business-to-business integration sophistication, *Information Systems Journal*, 20, pp. 5-24.
59. He, H., Baruch, Y. (2009). Transforming organizational identity under institutional change, *Journal of Organizational Change*, 22 (6), pp. 575-599.
60. Chana, H.K., Yina, S., Chan, F.T.S. (2010). Implementing just-in-time philosophy to reverse logistics systems: A review, *International Journal of Production Research*, 48 (21), pp. 6293-6313.
61. Neves, P., Caetano, A. (2009). Commitment to change: Contributions to trust in the supervisor and work outcomes, *Group & Organization Management*, 34 (6), pp. 623-644.
62. Chan, H.K., Chan, F.T.S. (2009). Effect of information sharing in supply chains with flexibility, *International Journal of Production Research*, 47 (1).
63. Kosnik, R.D., Bettenhausen, K.L. (1992). Agency theory and the motivational effect of management compensation: An experimental contingency study, *Group & Organization Management*, 17 (3).

64. Abrahamson, E. (1991). Managerial fads and fashions: The diffusion and rejection of innovations, *Academy of Management Review*, 16 (3), pp. 586-612.
65. Amankwah-Amoah, J., Debrah, Y.A. (2010). The protracted collapse of Ghana airways: Lessons in organizational failure, *Group & Organization Management*, 35 (5).
66. Zeitz, G., Johannesson, R., Jr. E.R. (1997). An employee survey measuring total quality management practices and culture: Development and validation, *Group & Organization Management*, 22 (4).
67. Hughes, P., Hughes, M., Morgan, R.E. (2010). Why do product-market strategies fail? A sociostructural examination under conditions of adherence, *Group & Organization Management*, 35 (5).
68. Moore, G.C., Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation, *Information Systems Research*, 12 (3), pp. 192-222.
69. Innes, J., Mitchell, F., Sinclair, D. (2000). Activity-based costing in the U.K.'s largest companies: A comparison of 1994 and 1999 survey results, *Management Accounting Research*, 11 (3), pp. 349-362.
70. Abdel-Kader, M., Luther, R. (2006). Management accounting practices in the british food and drinks industry, *British Food Journal*, 108 (5), p. 336.
71. Brown, D.A., Booth, P., Giacobbe, F. (2004). Technological and organizational influences on the adoption of activity-based costing in Australia, *Accounting and Finance*, 44 (3), p. 329.
72. Al-Omiri, M., Drury, C. (2007). Organizational and behavioural factors influencing the adoption and success of ABC in the UK, *Cost Management*, 2007, 21 (6), pp. 38-48.
73. Al-Omiri, M., Drury, C. (2007). A survey of factors influencing the choice of product costing systems in UK organizations, *Management Accounting Research*, 18 (4), pp. 399-424.
74. Krumwiede, K.R. (1998). The implementation stages of activity-based costing and the impact of contextual and organizational factors, *Journal of Management Accounting Research*, 10, pp. 239-277.
75. Chenhall, R.H., Langfield-Smith, K. (1998). Adoption and benefits of management accounting practices: An Australian study, *Management Accounting Research*, 9 (1), pp. 1-19.
76. Abrahamson, E. (1996). Management fashion, *Academy of Management Review*, 21 (1), pp. 254-285.
77. Lapsley, I., Wright, E. (2004). The diffusion of management accounting innovations in the public sector: A research agenda, *Management Accounting Research*, 15 (3), pp. 355-374.