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# Achieving Business Success Through Information and Communication Technologies Adoption by Small and Medium Enterprises in Oman

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**Abstract:** Effective management of Information and Communication Technologies (ICT) can improve productivity and performance of an organization. This paper identifies key factors that are essential for achieving business value by Small and Medium Enterprises (SMEs) through ICT adoption. A survey was conducted to obtain data regarding the current status of ICT adoption among SMEs in Oman. The Chi Square Test was employed to determine the effect of nature of organization on ICT infrastructure capabilities and factor analysis was used to identify the key elements for achieving business value from ICT. Results of this study show that size of an organization plays an important role in its ICT infrastructure. This study has identified seven factors that assess business value of ICT adoption in SMEs. These factors include: organization and management practices, strategic, informational, transactional and organizational change benefits, impetus for ICT investment and support from government contribute to achieving business value through ICT. This study, it is hoped, will be useful to ICT managers and researchers who intend to optimize business value through ICT adoption. Furthermore, results will help understand barriers and benefits of ICT adoptions. This study will make valuable contribution to the literature since the number of studies on the benefits of ICT adoption by SMEs in developing countries are quite limited.

**Key words:** Information and Communication Technology (ICT) · Small and Medium Enterprises (SMEs) · Oman · Business values · Management practices

## INTRODUCTION

In the present era of economic globalization and electronic commerce, Information and Communication Technologies (ICT) plays an important role in the growth of business enterprises [1]. Modern organizations rely on ICT to achieve their business goals and gain competitive edge over their competitors in the market. The effects of ICT are felt not only in commercial organizations but also in non-profit organizations. In developed and developing countries, public and private enterprises have adopted ICT to improve service delivery and efficiency. The enhanced capabilities of design and delivery of digital goods using ICT have generated numerous opportunities, allowing firms to increase margin and revenue by accessing foreign markets directly. Papaioannou [2] discussed the outcomes of ICT in developing and developed countries and summarized the positive impact of ICT on productivity and economic growth. ICT facilitates easily available services and hence increases productivity in manufacturing enterprises. Moreover, social media networks and mobile commerce have significantly reduced physical transportation involved in advertising, banking and buying goods [1]. Burke [3] discussed several important benefits like maintaining an interactive websites and consequently attracting new customers and enhancing sales. Company's competitiveness can be enhanced by adoption of ICT tools in decision making processes too. In general, ICT contributes in four main areas of organizations 1) gives more visibility to organizations, 2) delivers substantial information to small business

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enterprises, 3) permit organizations to overcome traditional trade barriers and 4) enables online financial transactions.

Oman is a developing country in the Gulf Cooperation Council (GCC). The ICT adoption in Oman is relatively low in comparison with developed countries around the globe. Among the GCC countries, Oman is one of the relatively less developed markets for personal computers [4]. However, most of the large and international organizations in Oman use ICT in their workplace, enabling the workforce to share resources and to communicate with each other effectively. Many organizations in Oman have spent substantial amount of money on the development of ICT infrastructure. In spite of this the status of ICT adoption in Small and Medium Sized Enterprises (SMEs) is not similar to that of large and international enterprises for various reasons reported in the literature in section 2. Ashrafi and Murtaza [5] reported that one of the main barriers in ICT adoption is the lack of awareness of benefits offered by it. Elbeltagi *et al.,*[6] evaluated the factors that motivates Small and Medium-sized Enterprises (SMEs) to ICT adoption. Their model emphasized on the investigation of the direct and indirect influences of technological, cultural, environmental and organizational factors on the ICT adoption by SME's in United Arab Emirates. Apart from this, there is a very limited research available in the literature that discusses organization and management practices and types of benefits achieved by ICT in organizations in the Middle East in general and Gulf Cooperation Council (GCC) countries, in particular. The main objective of this paper is to fill this gap by investigating the current state of management practices and benefits realized by ICT adoption in Omani SMEs.

**Background:** Oman is one of the important member nations within the GCC located in the south eastern region of Arabian Peninsula, adjacent to Saudi Arabia, Republic of Yemen and the United Arab Emirates. The improvement in oil prices, since the year 2000, resulted in a tremendous improvement in economic growth.. Oman has maintained a significant trade surplus by virtue of its oil and gas exports. The main characteristics of Oman are summarized in Table 1.

The decision makers in Oman have taken several steps to develop ICT infrastructure. The growth of ICT development continues to increase as technology evolves and IT solutions have now been adopted in most of the public and private sectors. At present, there are two main companies, Omantel and Nawras (now called Ooreedoo), that provide GSM services, leased lines, internet services and land telephone lines in Oman. Other companies were given permission to operate as resellers of the GSM services in Oman and by 2010 there were five such companies [7]. In 2007, Omantel and Nawras started providing broadband wireless services which enable subscribers to access internet from both home and public places. According to Business Monitor International [4] report, the government's e-Oman goals include bridging the digital divide and making e-government services available to the whole population. The Information and Telecommunication Authority (ITA), a public undertaking has launched a number of IT-related infrastructure projects, with one core component being an e-government services portal, which is a gateway to online services offered by government departments. The World Bank [8] reports that 60 percent of population in Oman is using internet for various purposes. The increase in internet usage in Oman and in communication-enabling facilities in general, is indicative of the growth in the adoption of ICT in many spheres of daily-life.

This paper is organized as follows: Section 1 contains: introduction and background; Section 2 describes literature review related to ICT adoption by SMEs; Section 3 describes the research methodology; Section 4 outlines results and discussion to support research questions and finally, Section 5 presents conclusion and recommendations for SMEs for adopting ICT.

Table 1: Overview of Oman

| Main characteristics of Oman | | |
|---|---|---|
| Capital and largest city | | Muscat |
| Official languages | | Arabic |
| Religion | | Islam |
| Government | | Monarchy |
| Area | Total | 309,501 $km^2$ |
| Population | September 2014 estimate | 4,055,418 |
| GDP(PPP): 2013 estimates | Total | $94.86 billion |
| | Per capita | $29,800 |
| Currency | | Rial (OMR) |

(Source: The World Factbook, 2014) [36]

## Literature Review

**SMEs and Their Role in a Country's Economy:** The Small and Medium-sized Enterprises (SMEs) are a mixed group of businesses usually operating in service, trade, agri-business and manufacturing sectors. SMEs are often classified by the number of employees and/or by the value of their assets. The size classification varies within regions and across countries relative to the size of the economy and its endowments. In this research, we classify SMEs based on the size of their employees. Enterprises with less than 10 employees are regarded as Micro, between 11 and 50 employees as Small, between 51 and 250 employees as Medium and over 250 employees as large organizations. SMEs constitute more than 95% of all firms in many countries [9]. In general, SMEs offer more benefits compared to larger companies in terms of job creation, growth and efficiency. It has been widely recognized that SMEs not only play an important role in the economy of a country, but are also crucial to the country's economic progress and stability. Most of the developed and developing countries have formulated policies in order to facilitate the growth of SMEs. Furthermore, SMEs are the potential enterprises that aspire for higher returns on assets, higher growth of employees and less likely to fail [10]. SMEs play an important role in the creation of employment opportunities and economic growth [11]. Furthermore, in most countries, SMEs generate a substantial share of GDP and provide a breeding ground for entrepreneurship and new business ideas.

**ICT Adoption by SMEs:** The realization of the importance of ICT adoption in SMEs has motivated many countries to spend more on ICT solutions and awareness programs in order to gain the promised benefits. Researchers (Caldeira and Ward [12], Lucchetti and Sterlacchini [13], Morikawa [14], Gregor *et al*., [15], Schubert and Leimstoll [16] and Costello *et al*., [17]) have discussed adoption of internet and e-business by SMEs in the developed countries. However, there are limited studies discussing ICT adoption in developing countries (Mutula and Brakel [18], Tan and Eze [19], Shih *et al.,*[20], Alek*eet al.,*[21], Apulu *et al*., [22]). Despite the importance of ICT and the emphasis laid by various governments to encourage its adoption, SMEs have been slow in taking it up for various reasons (Dawn *et al*., [23], Lawson *et al.,*[24], Houghton and Winklhofer [25], Tan and Eze [19], Apulu *et al*., [22]). One of the reasons may be the perceptions that the benefits of ICT implementation may not outweigh the cost. Tan and Eze [19] reveal that Malaysian SMEs were slow in the adoption of internet-based ICT due to their perceived lack of necessity for their businesses and also due to financial constraints. Steinfield *et al*., [26] examined the relationships between use of ICT, the benefits a company derives from membership in a rural business cluster and the success of rural companies.

Heeks [27] discusses that ICT project failures in developing countries are higher than those in developed countries, possibly due to the lack of technical and human infrastructure. Mofleh *et al*., [28] also suggest that some of the major ICT initiatives in developing countries have failed to achieve major development outputs. Adoption and diffusion of ICT in SMEs in developing countries is relatively slow. Duan *et al*., [29] identified that a lack of ICT skills and knowledge in SMEs as one of the major challenges in all European countries, particularly in UK, Poland and Portugal.

**ICT Adoption in GCC Countries and Oman:** In the late 1990s, GCC governments started investment in the development of ICT infrastructure, enabling them not only to renew, but also to expand their ICT infrastructures by implementing new technologies. Manochehri *et al*. [1] reported that between 2000 and 2008, the percentage of firms with access to internet increased substantially across all GCC countries. Furthermore, Hamade [30] discussed the major reasons for ICT adoption in Arab countries into two categories: one is related to the basic infrastructure and the other to government policies and regulations.

HSBC Middle East Bank estimates that there are only 15,000 to 20,000 SMEs in Oman generating 10-20% of the total employment [31]. This estimate indicates that there is a significant potential for the number of SMEs in Oman to grow, thus increasing their contribution to both GDP and employment and becoming more competitive at both regional and international levels. According to Business Monitor International [4], SMEs as well as large companies are expected to invest in ICT in order to deal with increased competition and take advantage of regional opportunities.

The business enterprises in Middle East countries in general and GCC in particular, do face challenges of effectiveness and adoption of ICT. Shehadi *et al.,*[32] have identified a lack of key enabling resources, inadequate infrastructure, transient funding and oversight as the main barriers in ICT adoption in GCC countries. For instance, in Oman, lack of information about suitable ICT solutions and implementation are some of the major barriers in adopting ICT [5]. The findings of

this research confirm the findings of the research conducted by Al-Gharbi and Ashrafi [33], in which they identified the following key factors contributing to the slow adoption of internet in the Omani private sector, high initial ICT investment set up and running costs; concerns over the implementation and integration of IT systems; lack of skilled employees to develop, maintain and/or use ICT efficiently; security and privacy concerns; high telecommunication costs; and lack of well-developed IT vendors' capabilities in delivering IT systems tailored to their business needs. In the literature, the relationship between adoption of ICT in SMEs and factors such as running cost, skilled manpower, security and privacy concerns to name a few, contributing to the business values are discussed by many researchers. The relationship between ICT adoption in SMEs, the business environment, organization and management and the associated contribution of ICT are largely unexplored.

This study posits the following key research questions:

- What is the current status of ICT Infrastructure in Oman with respect to adoption of ICT?
- What is the impact of the size of an organization on the ICT Infrastructure in Oman with respect to the adoption of ICT?
- What are the main drivers to achieve business success through ICT adoption by SMEs in Oman?
- What is the relative importance of the main drivers to achieve business success through ICT adoption by SMEs in Oman?

Finally, the study intends to reflect on the outcomes of ICT adoption in Oman in terms of growth and productivity.

**Research Methodology:** The methodology adopted in this study is similar to the methodology adopted by Gregor *et al*., [15] and Sharma *et al*., [34]. This study examines the IT infrastructure and management practices in which ICT is implemented by Omani organizations. In particular, it explores the relationships between ICT, the business environment, organization and management and the associated contributions of ICT to business value. In order to determine the extent of the adoption and usage of ICT in SMEs in Oman and achieve the research aims and objectives the following research tasks were conducted. Based on the literature review, a survey instrument was customized to determine the usage, effects and perceptions of Omani SMEs towards ICT adoption on the basis of the study conducted by Gregor *et al*., [15]. The survey instrument used for this research considered 39 items with responses recorded on a "five point" scale with "1" indicating strongly disagree and "5" indicating "strongly agree". Specifically detailed information was collected on the present technological infrastructure, the reasons behind ICT investment, organization and management practices used, benefits achieved by the ICT investments and the level of support from government or private organizations available to SMEs in ICT adoption. It has been recognized that IT managers or executives at higher levels are well informed and play an important role in decision making regarding ICT adoption in their organizations. Therefore, our target sample was senior IT managers or owners in case of micro organizations, whereas IT managers in case of other organizations. Survey questionnaires were handed out to around 700 IT managers or owners from all industry sectors throughout Oman by email. Some surveys were dropped personally in the capital area. Out of the 124 survey questionnaires received, 98 were completed and used in the analysis. That shows a response rate of 18% that compares favorably to the response rate of other similar studies in other countries. In general, high profile respondents share limited information about an organization, which have a negative effect on response rate. The data collected from the survey were analyzed using IBM SPSS 21.0

## RESULTS

This study attempts to obtain an appropriate support to the research questions proposed in the Introduction. The research questions are supported by statistical analysis of the primary data collected from IT managers of SMEs in the following section. To begin with, the current status of ICT usage and impact of company size on the adoption of ICT by SMEs in Oman is presented followed by identification and ranking of key drivers to achieve business success through ICT adoption by SMEs in Oman.

**Research Question 1: What is the status of ICT Infrastructure Environment in Oman to Adopt ICT?:** In the survey, 13% organizations were micro, 30% small, 39% medium and 18% large organizations. This showed a reasonable representation of SMEs. In data analysis large organization were not included. Respondents details were as follows: 42% were managers, 29% executives, 21% mid-level managers and 8% owners. This shows that majority

of the respondents were at manager or executive levels and that the professionals at this level play a significant role in the decision making process. Of the total number of organizations studied,78% belonged to private and 22% to government and public sector. The composition in terms of industry was as follows: 36% manufacturing sector, 24% IT service providers, 17% from service industry and 27% others. The results of the survey reveal that 95% of the organizations in Oman were using a Local Area Network and 53% organizations were using Extranet. Further, 76% of the organizations in Oman were using broadband (DSL) internet connection and 42% were using own "leased line". This shows that the majority of the organizations are using substantial internet technologies.

In response to the question regarding the purpose of internet use, 99% of the organizations responded that the primary purpose was "sending and receiving email", 78% responded "getting information about goods and services", 76% "getting information from government and public organizations", 74% "searching and research activities", 70% "providing customer services", 64% "performing internet banking or accessing financial services", 58% "interacting with government organizations/public authorities" and 31% "delivering products online". Thus, organizations are using internet for a wide variety of purposes. With respect to the type of business software used by organizations, 98% mentioned that they use office software (word processor, spreadsheet and database), 91% use some sort of business packages (e.g. accounting, sales, marketing, payroll) and 49% use workgroup application (e.g. Microsoft Exchange). With regard to the use of advanced software systems, 39% of organizations use production management software, 35% use web designing software (e.g. FrontPage, Dreamweaver) and 27% use Business Intelligence software(s) such as IBM Cognos and MS performance server. The general trend reflected from the data indicates that the use of advanced software(s) by organizations is limited as compared to basic office and business software(s). This is consistent with other similar studies in other countries [15].

In terms of IT resources, 72% of the respondent organizations in Oman have an internal IT unit or their own ICT department. Sixty three percent organizations were staffed by 1-10 full-time ICT employees, 23 % have between 11-20 IT staff and 14% have more than 20 IT staff. The size of IT-staff in the surveyed organizations is limited. In response to a question whether their IT staff has adequate understanding of the business issues, 64% responded "agree", 11% "disagree" and 23% "not sure". Furthermore, responses to one of the questions pertaining to ICT support, 62% replied that they seek help from their internal IT unit or specialized IT department, 12% from other staff specialized in IT, 12% from a consultant and the remaining 12% outsourced it to external organization. When asked whether or not they are currently outsourcing any of their ICT within Oman or off-shore, 48% respondents mentioned "yes" and 52% "no". The responses to the question regarding the success of outsourcing arrangements, 60% of organizations mentioned that they were successful, 3% were not satisfied and 36% remained neutral.

**Research Question 2: What is the Impact of nature of an organization on the ICT Infrastructure environment in Oman to adopt ICT ?:** The following null hypotheses are proposed to support the aforementioned research questions. The nature of organizations in the following section was defined using the scale "micro", "small", "medium" or "large".

H1: Nature of an organization is independent of having ICT department in an organization.
H2: Nature of an organization is independent of having types of internet connection in an organization.
H3: Nature of an organization is independent of having Extranet in in an organization.
H4: Nature of an organization is independent of having LAN in an organization.
H5: Nature of an organization is independent of types of organization i.e. public, private, government or others.

The results of cross-tabulation are presented in table 2 to test hypothesis proposed to support research question two in this study.

Based on the results of data analysis summarized in Table 2 where all hypotheses are tested at 5% level of significance, hypothesis 1 is rejected (Chi Square statistic = 13.14, p-value < 0.05). Thus, the nature of company is dependent of having ICT department in an organization. The study failed to reject hypothesis 2 (Chi Square statistic = 5.14, p-value > 0.05); therefore, the nature of an organization is independent of having types of internet connection in an organization. Hypothesis 3 is rejected (Chi Square statistic = 7.89, p-value < 0.05); which shows that nature of organization is dependent on having Extranet in an organization. Hypothesis 4 is rejected (Chi Square statistic = 8.18, p-value < 0.05); therefore, the nature of an organization is dependent on having LAN in an organization. The study failed to reject hypothesis 5

Table 2: Cross Tabulation

| | | Company Size | | | |
|---|---|---|---|---|---|
| | | Micro | Small | Medium | Chi Square statistic (p- value) |
| ICT Department? | No | 7 | 11 | 8 | 13.24 (0.004) |
| | Yes | 7 | 20 | 28 | |
| Types of Internet connection | Dial up | 0 | 4 | 4 | 5.14 (0.303) |
| | DSL | 10 | 21 | 26 | |
| | Leased line | 2 | 4 | 5 | |
| Extranet? | No | 9 | 16 | 19 | 7.89 (0.048) |
| | Yes | 5 | 15 | 17 | |
| LAN | No | 2 | 6 | 3 | 8.19 (0.041) |
| | Yes | 12 | 25 | 33 | |
| Type of organization | Private | 16 | 25 | 24 | 15.28 (0.08) |
| | Public | 0 | 0 | 3 | |
| | Government | 0 | 5 | 6 | |
| | Others | 0 | 1 | 1 | |

(Chi Square statistic = 15.28, p-value > 0.05). Therefore, the nature of an organization is independent of the type of an organization i.e. private, public, government, or others.

**Research Questions 3: What are the main drivers to achieve business success through ICT adoption by SMEs in Oman?:** Factor analysis was employed in this research to identify principal components that contribute to the business benefits of ICT in Oman. Factor Analysis is a commonly used multivariate data analysis tool in various research domains [35]. The fundamental objective of employing factor analysis is to obtain a smaller set of uncorrelated variables with the help of a set of linear combinations of the original variables to maximize the variance of these components [35]. Before employing the factor analysis, samples of the Kaiser-Meyer-Olkin (KMO) test were used to determine whether the partial correlations of the variables were small. The result of KMO measure was 0.868, which implied good correlation among a set of variables. The KMO measure justified an appropriateness of factor analysis in this research. Bartlett's test of sphericity was also employed to test null hypothesis that all variable are uncorrelated. In Bartlett's test, Chi-Square was approximately 3070.017, degrees of freedom =820 and p-value = 0.000, On the basis of these results, null hypothesis was rejected which implied that all variables are correlated. Bartlett's test of sphericity also justified an appropriateness of factor analysis. Factor analysis was used to group the items in the survey questionnaire into useful clusters. The estimation of internal consistency reliability of constructs was assessed using Cronbach alpha values. The results of Cronbach alpha are higher than 0.716 for each factor, summarized in Table 3, suggest significant reliability of each factor. Construct validity can be asserted because the measurement instrument was largely customized from the Gregor *et al*., [15] study.

Principal component analysis method in factor analysis was used because it includes as many factors as available in the analysis. Orthogonal Varimax rotation was used because it minimizes the number of variables which have high loadings on any one given factor resulting in easier identification of each variable with a single factor. Orthogonal rotation of items also helps in the generalization of the research findings, which is very important in an empirical research. Variables with a factor loading of 0.42 and above were considered significant in this study [35]. Seven factors were extracted from 39 variables considered for factor analysis. In selecting the number of factorial groups to be extracted, the Kaiser criterion which was proposed in 1960, was adopted. Kaiser criterion states that all the components with Eigen values more than 1.0 are to be considered. Therefore, seven factors with Eigen values greater than 1 were extracted. These seven factors accounted for 70% of the total variance explained. Table 3 shows mean, standard deviation and factor loadings of each variable considered for study together with possible factor names. Furthermore, Table 4 shows the variance explained by each factor.

**Research Question 4: Relative importance of the main drivers to achieve business success through ICT adoption by SMEs in Oman?:** Table 4 shows the variance explained by each of the seven factors. Table 4 shows that "Organizations and Management practices" is the most important factor (20.76 %) for achieving business success through ICT adoption by SMEs, followed by "Impetus for ICT Investment" (10.96 %), "Strategic Business Benefits Realized"(9.47%), "Informational Business Benefits" (8.59%), "Transactional Business

Table 3: Descriptive Statistics, Factor analysis and reliability of constructs

| Constructs | Mean | S.D. | Factor loading | Cronbach Alpha |
|---|---|---|---|---|
| Factor 1: Organization and Management practices | | | | |
| a: Use a formal PM methodology | 3.64 | 1.336 | 0.852 | 0.951 |
| b: Develop formal business cases for ICT investments | 3.52 | 1.350 | 0.864 | |
| c: Have post-implementation reviews of ICT investments | 3.53 | 1.402 | 0.814 | |
| d: Employ external change management specialists | 2.83 | 1.294 | 0.572 | |
| e: Have the capacity to recognize and achieve significant additional benefits that were initially unanticipated | 3.42 | 1.221 | 0.819 | |
| f: Achieve valuable increases in ICT skill levels within the organization | 3.70 | 1.165 | 0.822 | |
| g: Engage in formal business strategic planning | 3.57 | 1.287 | 0.637 | |
| h: Engage in formal ICT strategic planning | 3.59 | 1.294 | 0.816 | |
| i: Seek to be an industry leader in adopting new ICT | 3.56 | 1.324 | 0.822 | |
| j: Establish formal contractual arrangements for ICT investments | 3.39 | 1.361 | 0.712 | |
| k: Integrate new ICT into existing business processes across key functional areas | 3.72 | 1.246 | 0.842 | |
| Factor 2: Impetus for ICT Investment | | | | |
| a: Keeping up with competitors | 3.65 | 1.189 | 0.739 | 0.779 |
| b: Being forced to do so by trading partners, such as suppliers | 3.11 | 1.058 | 0.776 | |
| c: Customer expectations | 3.99 | 0.974 | 0.700 | |
| d Taking advantage of an unplanned opportunity | 3.55 | 0.982 | 0.420 | |
| Factor 3: Strategic Business Benefits Realized | | | | |
| a: The creation of competitive advantage | 3.89 | 0.868 | 0.533 | 0.879 |
| b: Aligning ICT strategy with business strategy | 3.95 | 0.825 | 0.490 | |
| c: Establishing useful links with other organizations such as suppliers | 3.83 | 0.904 | 0.650 | |
| d: Enabling the organization to respond more quickly to change | 4.10 | 0.721 | 0.754 | |
| e: Improving customer relations | 4.19 | 0.695 | 0.748 | |
| f: Providing better products or services to customers | 4.21 | 0.773 | 0.666 | |
| Factor 4: Informational Business Benefits | | | | |
| a: Enabling faster access to information | 4.35 | 0.719 | 0.745 | 0.859 |
| b: Enabling easier access to information | 4.29 | 0.718 | 0.756 | |
| c: Improving management information for strategic planning | 4.19 | 0.695 | 0.531 | |
| Factor 5: Transactional Business Benefits | | | | |
| a: Savings in supply chain management | 3.74 | 0.764 | 0.704 | 0.850 |
| b: Reducing operating costs | 4.00 | 0.808 | 0.740 | |
| c: Reducing communicating costs | 4.13 | 0.841 | 0.725 | |
| d Avoiding the need to increase the workforce | 3.80 | 0.926 | 0.609 | |
| e: Increasing return on financial assets | 3.75 | 0.837 | 0.442 | |
| f: Enhancing employee productivity | 4.11 | 0.727 | 0.574 | |
| Factor 6: Organizational Change Benefits | | | | |
| a: An improved skill level for employees | 4.12 | 0.611 | 0.514 | 0.868 |
| b: Developing new business plans | 3.93 | 0.824 | 0.769 | |
| c: Expanding the capabilities of your organization | 4.13 | 0.765 | .803 | |
| d: Improving business models | 4.01 | 0.749 | .449 | |
| e: Improving your organizational structure and processes | 3.99 | 0.776 | 0.790 | |
| Factor 7: ICT support from government or private organizations | | | | |
| a: The ICT infrastructure in the country is adequate | 3.29 | 0.860 | 0.607 | 0.716 |
| b: There are financial incentives for ICT adoption (e.g. grants, credits, leasing options, financial assistance, tax incentives) | 2.89 | 0.925 | 0.734 | |
| c: Help is available for identifying suitable ICT products (hardware, software) and/or services | 3.04 | 0.868 | 0.727 | |
| d: Help is available for finding the right human resources to manage ICT | 3.05 | 0.862 | 0.708 | |

Table 4: Variance Explained

| Factors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Variance Explained | 20.76 | 10.96 | 9.47 | 8.59 | 7.39 | 6.56 | 6.28 |

Benefits" (7.39%), "Organizational Change Benefits" (6.56%) and "ICT support from government or private organizations" (6.28 %). These rankings can provide insights regarding the relationship between ICT adoption and business success.

## CONCLUSION

The findings of this study show that most of the organizations in Oman use internet technologies for business activities. The usage of basic office suites and

business applications is common in SMEs, but the use of advanced applications such as Workgroup, Production software (raw materials, inventory), Web design software and Business Intelligence is limited. Most of the SMEs have ICT departments and they rely on them for assistance. In many organizations, the IT staff of the respondent organizations have an understanding of the business issues. Nearly half of the surveyed organizations outsource some of their IT activities and 60% of them are satisfied with their outsourcing arrangements. These findings are consistent with another study conducted in Australia [15].This study explored understanding of some of the reasons why SMEs are slow in adopting ICT in business enterprises. These results show that a number of benefits are associated with the use of ICT, which vary in magnitude and or importance. Also the study has helped in identifying key factors that have a positive impact on using ICT in SMEs. The results of factor analysis identified seven factors. High mean values of variables (Table 3) show that the identified factors are important and contribute in achieving business value through ICT. The results of the factor analysis show that "Organization and Management practices" is the most important and most influencing factor in realizing business value through ICT adoption. Other factors that contribute to achieving business value through ICT include strategic, informational, transactional and organizational change benefits, impetus for ICT investment and support from government. The study shows that SMEs in Oman are aware of the benefits of ICT adoption and are using it for the benefit of their businesses. However, there is a need to further increase awareness among SMEs, particularly in micro organizations of the benefits of ICT adoption in order to make them more productive and competitive. Also, SME's need affordable ICT solutions and relevant guidance. The study demonstrates that SMEs in Oman can improve their productivity and become more competitive by incorporating best organization and management practices in their business. The findings of this research will provide a foundation for future researchers and will help policy makers to understand the current state of affairs in the usage and impact of ICT on SMEs in Oman. The study can be beneficial for SMEs in Oman and other GCC countries aspiring to be more competitive by taking advantage of Information and Communication Technologies.

Based on the survey and the investigation of the status quo in ICT adoption in SMEs and start-ups in Oman, the following recommendations are proposed: SMEs need to put the adoption of ICT at the top of their priorities since it contributes to strategic, informal, transactional and other business benefits. SMEs need to invest in ICT since they can reap benefits associated with organizational changes. The study has demonstrated that SMEs can use ICT in reducing the running costs of their businesses. These benefits could help SMEs in competing internationally. The results have shown that there is a lack of government support and lack of incentives for SMEs in adopting ICT. There is a need that planners in the government of Oman develop policies and strategies to provide incentives for SMEs to adopt ICT. The government of Oman needs to develop strategies for increasing ICT awareness among SMES and provide advice and consultancy for ICT adoption by SMEs in Oman.

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