

Sustainability of ICT Implementation on Small and Medium-Sized Enterprise in the Middle East

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Abstract

The purpose of this research paper is to present an understanding of the effect of Information and Communication Technology (ICT) upon Middle East's small and medium-sized enterprises (SMEs). Specifically, this work analyses the SMEs reliance upon the ICT and seeks to determine the potential of the effect of ICT poses upon infrastructure, software, investment drivers, business advantages perspectives, and outsourcing trends.

A perceptual questionnaire survey was used to elicit responses from 100 executives working in SME's using the judgmental non-probability sampling. Summary statistical analysis of Boolean was employed to elucidate upon respondents' perceptions.

The majority of the survey found that few Gulf SMEs are familiar with the advantages of ICT adoption. The key drivers for ICT investments are greater customer service and staying competitive. Most of the survey participants felt that incorporating ICT into their operations has improved their overall performance and provided additional advantages. The vast majority of small SMEs relies upon outsourcing IT functions. ICT adoption was hindered by an absence of inner capabilities, the higher ICT cost, and information deficiency of the application and solution of ICT. Increasing SMEs' knowledge about the importance of ICT adoption requires more attention and deliberate efforts. The result reveals that there is more need for training in the use of ICT in small enterprises and free professional assistance and advising for SMEs. These results have substantial policy implications for SMEs adopting and using ICT. The outcomes of this study will assist policymakers in understanding the present level of ICT and its impact on SMEs in the Middle East.

Keywords: ICT, SMEs, Survey, Investment Drivers, Middle East

Introduction

Technology is having a profound impact on the global economic system, with major shifts occurring in how governments and companies produce goods, transact commodities, make investments, and invent innovative new technologies (Segrestin, et al., 2022). It is possible for international firms to communicate with one other in real-time, thanks to the deployment of advanced information technology (He, et al., 2021). The advent of new materials is reshaping engineering, communications, and other sectors. In the manufacturing sector, productivity and employment patterns have been

modified by advanced manufacturing technology. People and goods may now travel around the world much more quickly because of advancements in air and sea transportation (Vrontis, et al., 2021).

All sorts of public and private enterprises throughout the world are using information and communications technology (ICT) to improve cost efficiency, customer service, and satisfaction. Similarly, governments are also using ICT to provide better public services to their citizens. When implementing new technology, free market competition, security and trust, compatibility and standardisation, and

ICT finance must all be supported (Chen, et al., 2022).

Most multinational and national corporations in the Middle East are equipped with cutting-edge information technology systems that allow them to do business efficiently. Several multinational businesses have invested significant resources in developing and implementing computer systems to assist in the conduct of their business. For various reasons, the situation with SMEs has not been the same as in other regions of the globe - comparable to the situation in other countries (Zahra & Hashai, 2022). At present, no research study has been undertaken in the Middle East.

As globalisation and competition increase pressure on national economies, governments must ensure that their basic infrastructure can support both general development and innovation. Given contemporary limited supply of resources available on the global market. A combination of population shifts, socioeconomic challenges, and the rapid rate of urbanisation is placing immense pressure on current general infrastructure while also boosting the need for additional infrastructure (Agarwal, 2022).

The Middle East region is the fastest-growing region of the world (Chen, et al., 2022). In the last decade, the Middle East has spent more on infrastructure than Latin America, Europe, and Central Asia combined, but less than South Asia and East Asia combined. Middle East (Sachs, et al., 2021). Saudi Arabia, Qatar, Kuwait, and the United Arab Emirates have invested the most in basic infrastructure in the Middle East. Nearly 11% of their yearly GDP is estimated to be earmarked for infrastructure improvements in oil-exporting developing countries. Countries that import oil will need to spend around 6% of their GDP in this area.

Digitalisation and ICT developments in the Middle East area are quite distinct because of the differing degrees of development between and within nations. Infrastructure, economics, the employment market, and social media are among the topics addressed. Many nations in the Middle East region lack adequate governance for innovation, particularly in the field of ICT. As a result, most new ideas come from outside sources. Despite this, practically all governments

in the area are implementing policies that favour digitization to promote economic growth.

When it comes to economic diversification, governments in the Middle East Region have made a variety of attempts, one of which has been to turn their region into a digital society. SMEs and the Middle East's economy will benefit greatly from ICT. Hence the ICT remains unpopular among SMEs for a number of reasons, including lack of research on the number and value of adoption of ICT in SMEs in Middle East economies.

Therefore, this paper reports an analysis of the potential effect of ICT upon SMEs in the Middle East. Concomitant objectives are to: assess the need for ICT within the SMEs (Oman, Qatar, UAE, and Saudi Arabia in the Middle East); assess the potential effect of ICT upon SMEs, and propose prescriptive recommendations that could maximise the benefits of ICT poses and help policymakers had a better understanding of it and deriving new policies to address the need of ICT integration in SMEs.

Information Communication Technology (ICT) and SMEs

ICT is defined as “a wide range of computerised information and communication technologies” (Igbayue, 2022) includes “intranet wireless networks, tools of corporate productivity and network security” (Sayaf, et al., 2022).

SME is referred to companies with less than 10 employees known as Micro Enterprises. Those with ten to fifty employees are known as Small Businesses, and those with fifty to two hundred and fifty employees fall into the Medium-sized Business category. One of the criteria used to identify and qualify small businesses in this research (Kapurubandara et al 2006) was found to be valid by other similar studies.

SME's are now universally recognised to play a significant role in a country's economy and a critical role in ensuring stability. In New Zealand, about 99% of businesses are SMEs, which account for about sixty percent of all jobs. In the United States, small firms employ more than half of all workers (Aransiola, 2021). Small and medium-sized enterprises employ 67% of British employees (SMEs) (Werner, 2021). More than 99 percent of all firms in the EU countries are SMEs that employ 67 percent of the total workforce and generate 59 percent of

GDP (GDP) (Garcés-Ayerbe, et al., 2019). Since small and medium-sized firms (SMEs) account for the bulk of a country's gross domestic product (GDP), their growth is critical to spurring new business creation and fostering a culture of entrepreneurialism. Policymakers in rich and developing nations support SMEs, including the U.S, Great Britain, Japan, Germany, New Zealand, and Canada (Rupeika-Apoga, et al. 2022). New Zealand contributes more than 10 percent of its GDP to ICT, proving its knowledge of the field's relevance by ranking internationally (Adepoju, 2022). In OECD nations, SMEs contribute almost fifty percent in GDP while 60-70 percent in center nations, as per World Bank data, giving 60 percent to 70 percent of the jobs in these states (Iftikhar, et al., 2022). Statistics like these demonstrate that small and medium-sized enterprises (SMEs) are critical to a country's economic development, and the Gulf Region is no different.

Several studies have examined how small businesses in industrialised countries use the internet and electronic commerce (e-business), including (Attia 2022; Liu, et al 2022; Melović, et al., 2021; Gherghina, et al., 2021). Governments throughout the globe have formed special committees to investigate different aspects of SME information and communications technology adoption. Despite the significance of ICT and the efforts of many authorities to encourage SMEs to utilise ICT, SMEs have been hesitant to embrace ICT for a number of causes (Manzoor, et al., 2021).

While large corporations have the human and fiscal resources to deploy ICT, SMEs do not. Ziółkowska, (2021) states that SMEs in all European nations confront a significant problem owing to a shortage of ICT experience and competencies in their field of study. According to a study conducted by Mudzar & Chew (2021), SMEs are hesitant to embrace new technologies. SMEs may gain from the installation and deployment of ICT infrastructure, according to (Canhoto, et al. 2021). Internal and external hurdles to SMEs' adoption of ICT in a developing nation have been classified by Onileowo & Fasiku, (2021). Aspects such as owner management traits, organisational factors, the value and investment return, as well as external constraints such as infrastructure, social

and cultural factors, political and legal considerations, and regulatory factors are discussed.

There are just a few studies on information and communications technology (ICT) adoption in underdeveloped countries (Sharma, et al., 2021; Shapiro & Mandelman, 2021; Thabit, et al., 2021), while there is no research on ICT adoption in developed nations (Xing, 2018). According to the findings of a research performed by Karbolo (2021) into the adoption of information and communications technology by SMEs in Nigerian, the primary reason hindering ICT spread and extensive use is a lack of sufficient physical infrastructure. It has been difficult for developing countries to adopt ICT because of a variety of issues, including legal issues, ineffective ICT strategy development, a lack of Research & Development, lack of progress in using ICTs, and overdependence on foreign technologies (Park & Choi, 2019).

Recent industry research indicates that the GCC nations now spend more than five billion dollars per year on information technology, with that number likely to more than quadruple by 2010. The Gulf Region is quickly developing as one of the most powerful and fastest-growing regions globally. At present, the Gulf region's ICT expenditure in digital infrastructure is predicted to reach more than 70 billion dollars by 2024, citing a recent analysis by the Middle East Institute as evidence.

According to forecasts, expenditure in Saudi Arabia was predicted to reach 37 billion dollars in 2020. Meanwhile, it is predicted that the UAE's ICT expenditure will reach 23 billion dollars by 2024, while Qatar's investment will amount to around 9 billion dollars by the same year. Over the previous six years, the Middle East has witnessed the highest growth rate in internet use access, which is a hopeful indicator (McAuliffe, 2021). That is, despite tremendous progress achieved by GCC nations, including the Gulf area, in the development of information and communications technology, Until they catch up to the developed world's level of development, they do have a far toward to go. For the most part, like in other developing nations, the bulk of ICT activities in these nations are driven by government initiatives and policies.

To some extent, the present technical infrastructure, the motives for ICT investment, the limits and impediments to ICT adoption could be further assessed. The key driving forces of ICT adoption and emphasising the importance of SMEs to the Middle East's economy. To better understand the effect of ICT on small and SMEs, data on different aspects of ICT usage and utilisation were collected. It was the first phase of a wider inquiry on Middle Eastern SMEs' usage and impact of ICT.

Research Approach

Following activities have been conducted in order to find out the applications and implications of ICT in SMEs in the Middle East:

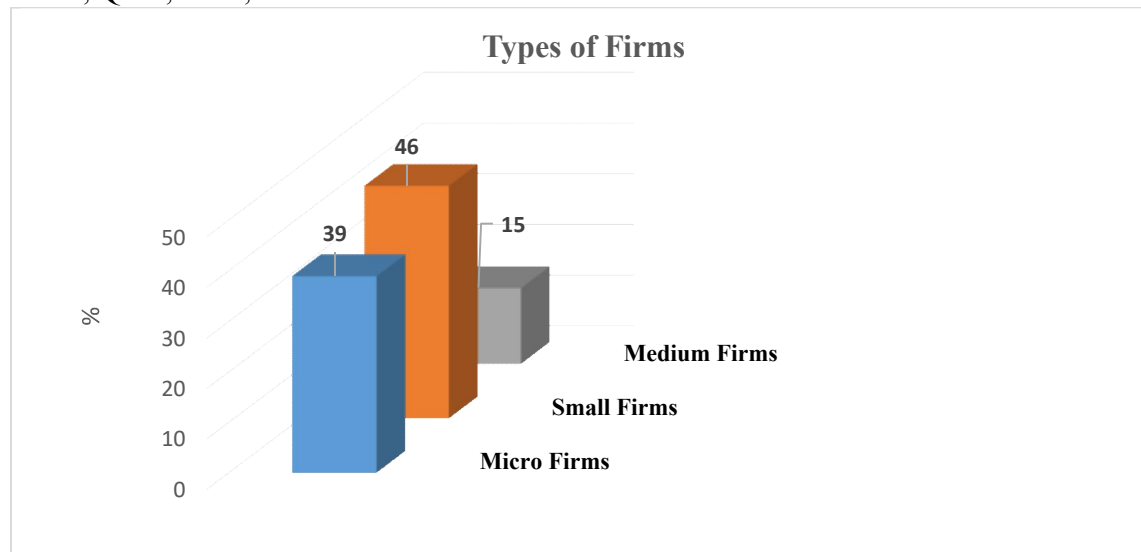
- A questionnaire-based of twenty-two questions regarding features, ICT infrastructure, internet usage, hurdles, and advantages in ICT adoption was developed (Illuminas 2006).
- The questionnaire was delivered to 150 SMEs of Oman, Qatar, UAE, & Saudi Arabia. A total of

100 completed questionnaires were received from businesses that have embraced information and communications technology. Because of their capacity and comprehension of the subjects explored in the questionnaire, the Executives completed the surveys as indicated in the questionnaire.

- Based on 100 responses, statistical analyses were conducted to analyse the influence of ICT on SMEs of the Middle East region.

Survey Finding and Discussion

There were 39% Micro-Enterprises (> 10 employees), 46% Small-Enterprises (10 to 15), and 15% Medium-Sized Businesses (>15 employees) according to our SMEs classification (50 to 250). More than 75 percent % the small enterprise in the sample of the study are Micro & Small Businesses. The detail is given in graph 1.

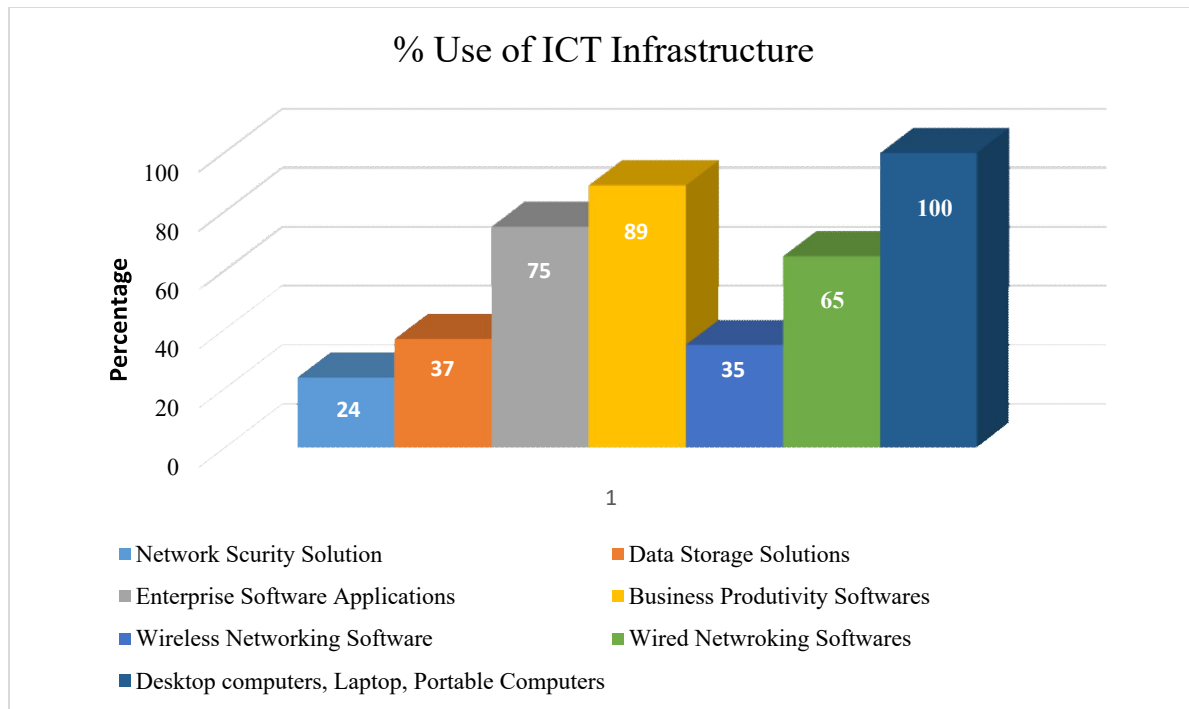


Graph 1: Firms Types

ICT Based Infrastructures

The research showed in Graph 2 that SMEs of the Middle East region 100% utilise portable computers, desktops, and laptops. The study found that almost 55% of Micro firms did not utilise ICT. While 85% of SMEs utilised tools of business productivity. These tools are PowerPoint, MS Word, and Excel. 65% of

SMEs used Enterprise software. 65 percent of SMEs enterprise employed a wired computer network solution to connect to the internet. In addition to network security measures, just 24% of the firms polled reported using



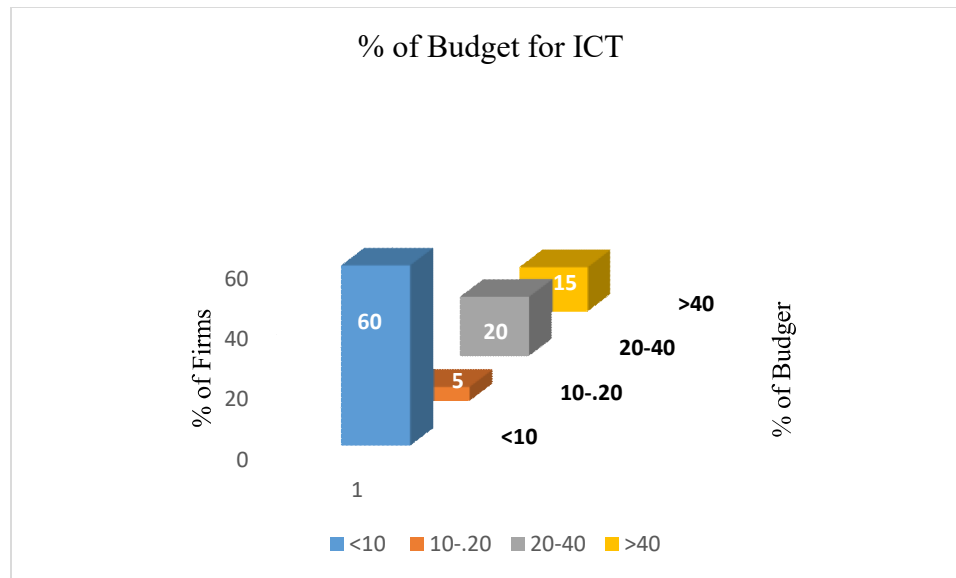
Graph 2 Staff of Information Technology

To anticipate that SMEs will frequently absent the assisting manpower, like I.T workers, to provide the type and effectiveness of assistance that is required; in addition, it is fair to expect that the expertise of such staff will frequently be insufficient and rudimentary. On the other hand, a specialised I.T department with a high number of support staff is found in certain companies. A company's size and, more importantly, the relative importance of the information and communications technology solutions that it implements are the two most important aspects that limit the presence of these employees in SMEs globally. In Middle East, SMEs face similar challenges, with approximately 55 percent of firms surveyed lacking a full-time information technology staff, and only 45 percent of firms having IT departments with full-time information technology staff.

Financing in ICT

Many SMEs aren't aware of crucial information and communications technology (ICT) that might significantly impact their operations. It is the major hurdle for the investment in ICT. What is the underlying reason for the firms that have previously invested and are anxious to see it again? And what proportion of their overall capital is allocated to the business? It's also important to know what they're investing in and why they're doing it. ICT investment is driven by several factors.

Graph 3 showed that SMEs allocate lower 10 percent of the budget for ICT, with only two percent of allocating between ten to twenty percent of their budgets to ICT investment, and only 8 percent firms allocating more than forty percent budgets for ICT.

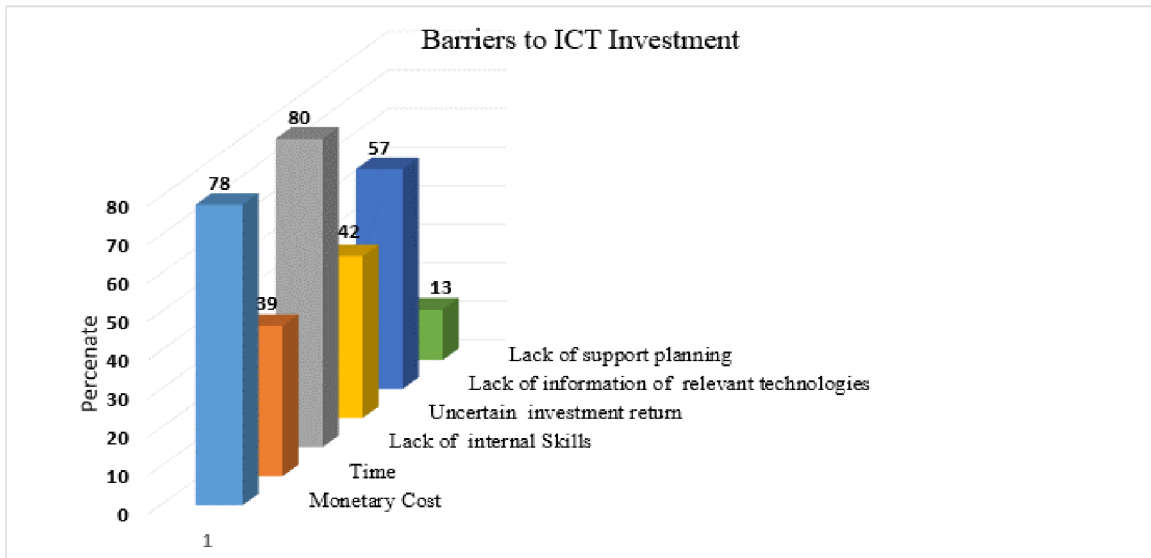


Graph 3% Budget for ICT

Hurdles in the Investment of ICT

There are several restrictions and roadblocks to ICT investment. According to the graph, 80 percent of respondents believe that a lack of sufficient internal competencies is a significant impediment to success. Several studies have shown that SMEs are under-human (Cueto, et al., 2022).87% of the respondent who took the survey said that ICT solutions and their implementation were too costly financially. Caiado, et al.(2022) found a similar result that the greatest deterrent to future investment was the high cost of doing businessICT. An estimated 57 percent of decision-makers in the firms under study felt that they did not have sufficient information on effective

technologies.As previously mentioned, this finding is also in conformity with the results of (Caiado, et al., 2022; Núñez-Canal, 2022), which confirmed that attendees were worried about costs and ambiguous more about marketing benefits, followed by poor internal knowledge. That SMEs demand free counsel, suitable information is shown by this. In response to the survey questions, 39 percent of respondents said they just didn't have the time to perform the tasks. Approximately 42 percent of enterprises are unclear whether or not to maintain their ICT investments, and 13 percent of the managers consider insufficient assistance from the company's top-level management. Figure 4 displays some of the most important barriers to SMEs adopting ICT infrastructure.

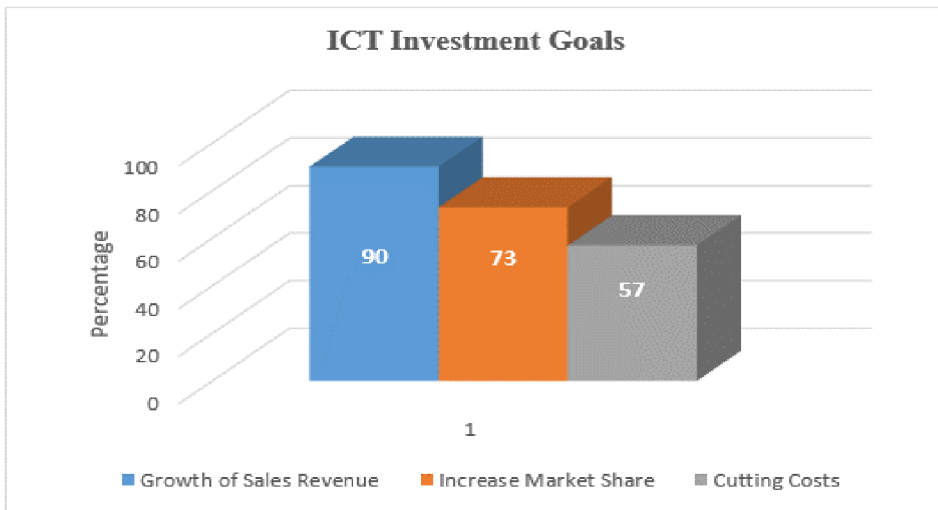


Graph 4

ICT Investment Goals

Firms' long-term aims for financing in ICT were to raise the market share, increase revenue, and cost reduction and expenditures in the polled

companies. Most businesses expect to experience an increase in sales revenue, 73 percent expect to see an increase in market share, and around 57 percent expect to see cost savings, as seen in Graph5.

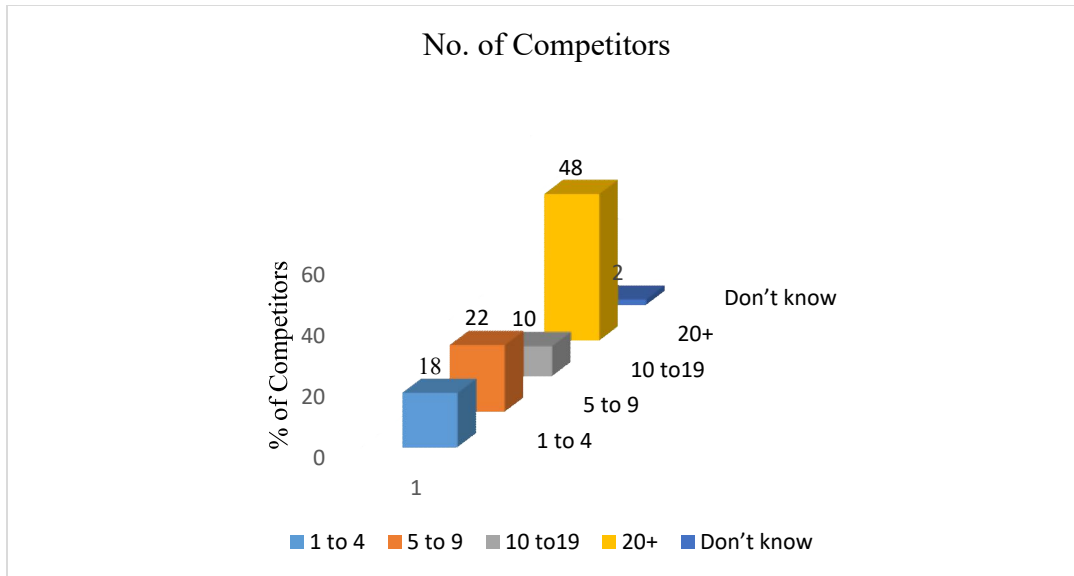


Graph 5: Investment Goals

Market Competitor

The intensity of competition in the market has a significant impact on mbusiness decisions. Graph 6 shows that in 48% of the companies, there are more than 20 direct competitors. One in five small businesses, one in ten medium-sized businesses, and one in fourteen medium-

sized businesses are all-SMEs with between 10 and nineteen rivals. As a result, competition among SMEs in the Gulf region is fierce, which may be one of the key motivations for their desire to use ICT infrastructure to improve their competitiveness.

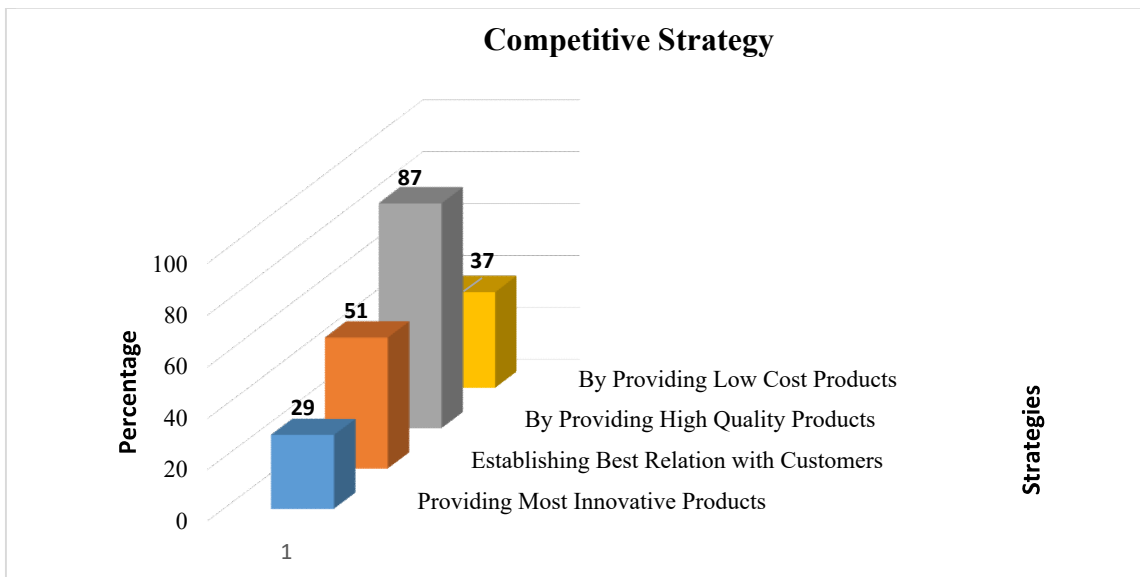


Graph 6: Market Competition

Competitive Planning

A popular business strategy is to separate one's company from its rivals. 87% of SMEs distinguish themselves by providing their

consumers with the best quality goods and services and by building long-term connections with customers (51%) as the main means of differentiation, as shown in Graph 7.

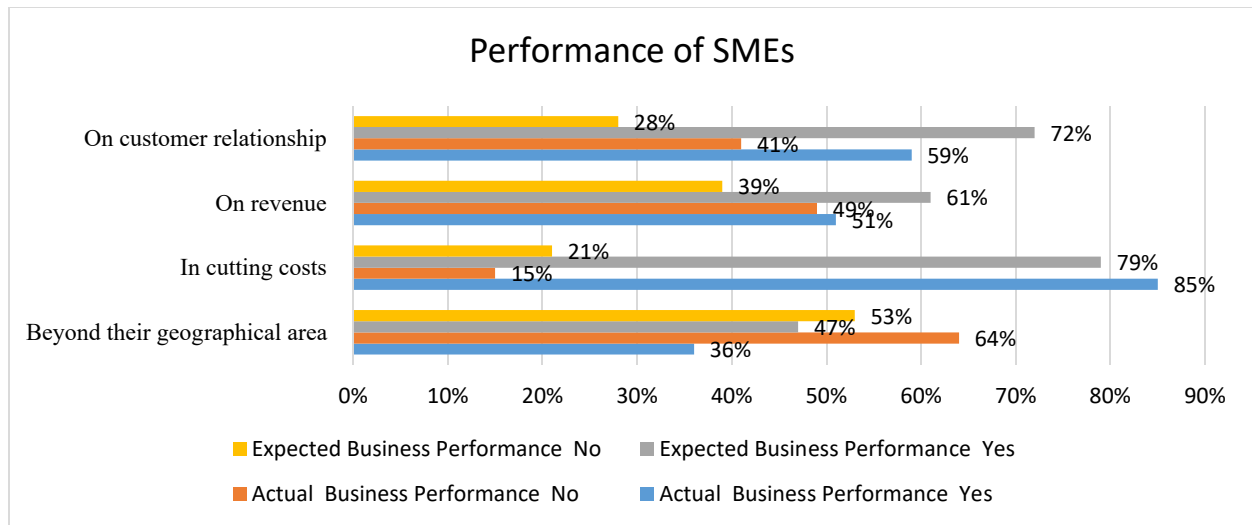


Graph 7: Strategy for competitive

Improvement in Performance of SMEs

A series of open-ended questions, it seeks feedback on the current and prospective advantages of ICT investment. Graph 8 shows that just 36% of SMEs have attained financial accomplishment outside of their immediate region. Because just 36% of small businesses have a website. According to this study, ICT has

helped 86% of companies save costs, while 51% have seen an increase in revenue and 59% have improved customer relations. For the most part, SMEs are excited about the long-term gains of Technology acceptance. This suggests that SMEs that have implemented ICT are optimistic about investing and reaping the benefits of ICT.



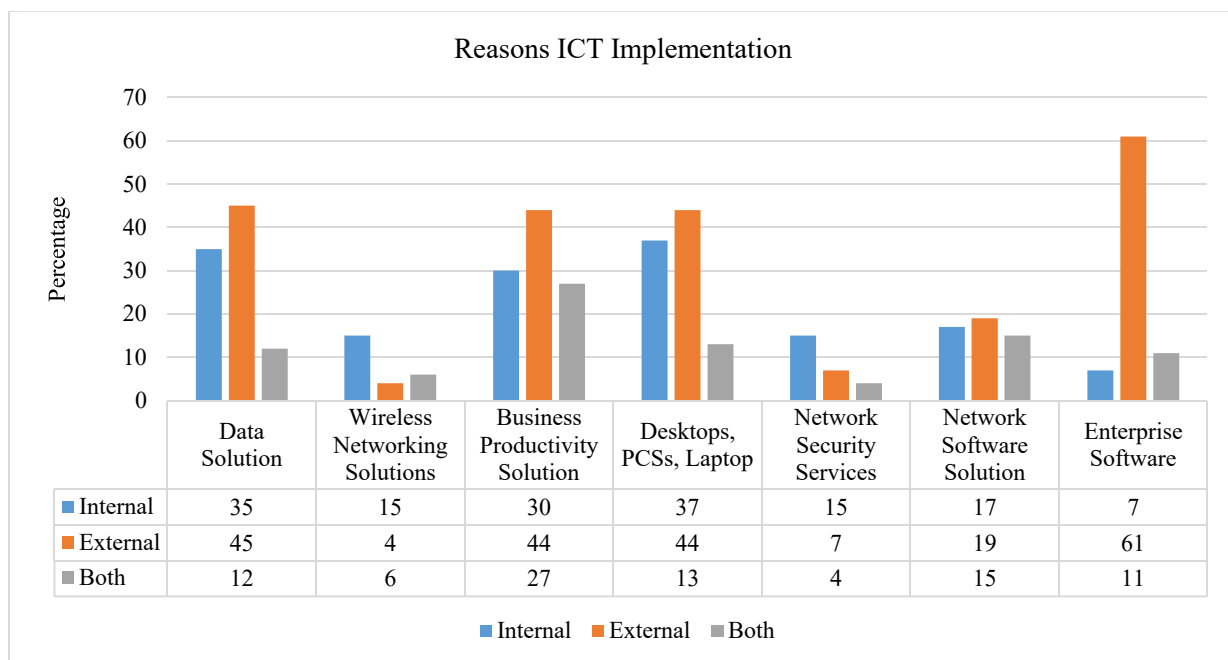
Graph 8: Performance of SME

ICT implementation Causes

However, it is equally important to know how such innovations were welcomed and utilised in SMEs. For the most part, firms polled relied on existing resources to adopt key technology, including installing and configuring this equipment. As technology progressed, companies began to rely more on external resources, such as business software programs, wireless networking, or mobile phone apps. More than one-third of companies utilise internal capabilities for desktops and laptops for

information storage and productivity apps. SMBs are outsourcing more complex technology, like ERP systems, to third parties at a rate of percent. Companies in the fundamental technology sector seem to be missing in-house expertise.

The use of both internal resources is not commonplace in adopting these technologies. It is common for small and medium-sized organisations to use external financing to get modern technology full operational but then rely on internal resources to maintain it.



Graph 9

Conclusions

The study found that SMEs in the Middle East have minor use of common ICT. In the case of ICT investments, SMEs of the Middle Region tend to concentrate on the functional and deliberate facets of the company. According to data, Gulf Region SMEs have a modest level of competition regarding ICT investment. ICT investments were primarily made to improve customer service, stay competitive, and execute company strategy. The competitive strategy for most small and medium-sized businesses was to afford quality products to their clients for creating long-term connections with them.

According to the report, ICT adoption has resulted in increased revenue and lower operational costs for many organisations. Two-thirds of those polled feel they will boost their company's performance in the future.

More than three-quarters of the organisations polled said that a lack of crucial internal skills is a significant impediment to ICT investment. Moreover, half of those surveyed thought the expenses of deployment were excessive. There is a shortage of relevant knowledge and instruction on the most appropriate and effective technology. A lack of time, senior management support, prior failures, and government legislation and requirements are all barriers to executing ICT initiatives in small enterprises. Other studies, such as this one, confirm that the conclusions reached here are true (Harindranath et al 2008). It is crucial for urgently need additional training facilities and initiatives taken to offer affordable ICT goods and services and the provision of free professional counsel to small businesses (SMEs). Legislation designed to encourage small and medium-sized firms to embrace and use new technology would considerably benefit from our findings.

The poll found that more than half of the respondents stated they outsourced some portion of their job. It's possible that a lack of internal ICT competence had a role. As a reminder of the significance of preparation of ICT for SMEs, our results are in accord with those of (Chibelushi 2008).

According to the study, more than half of the Gulf-based SMEs (small and medium-sized firms) are unaware of the benefits that ICT

adoption may provide. The results showed a shortage of ICT skills and procedures to discover and get aid and direction for small enterprises. ICT adoption may help SMEs enhance productivity and compete more effectively. Small and medium-sized businesses also need affordable ICT products, services, solutions, and expert help. The government and professional trade associations must address the gaps and issues revealed in this report (such as the Chamber of Commerce and Industry). They should introduce a new policy and government grants encouraging SMEs to adopt ICT to enhance their operation and business sustainability and productivity. It is beneficial to the Middle East's economic fortunes in the long term-

In solving the initial research aim, further questions and directions for future work had transpired, namely to: measure the actual impact of ICT in SMEs; derive new and pragmatic policies to implement the adoption of ICT in all industries; identify the factors in encouraging adoption of ICT; and develop innovative and attractive methods through which to encourage SMEs to commence ICT strategy plan.

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