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Integrated Web-Portal for SMEs in Oman

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ABSTRACT

Small and medium enterprises (SMEs) are critical to all economies, and Oman is no exception. These companies form 90 per cent of the corporate sector and have become a priority sector for the Government of the Sultanate. But in late 2017 and early 2018, these companies began to shrink. For two reasons, they were not supported by the government, and most small businesses used traditional techniques to market because of limited capacity. From here we looked for a way to enable government sectors to support companies and also to make all SMEs use modern marketing techniques, but we need to survey the SME market, assess the basic situation and needs of the SME sector. One reliable solution is the development of web services technologies based on the creation of an integrated portal for SMEs, so that anyone can obtain product information and ask each small and medium-sized company to increase sales and transactions from small and medium enterprises. Highly converged web services are the latest web technologies that can provide information to anyone who wants to use the SMES- portal, so that developers can access the methods and build web applications as needed. Hence, government sectors can communicate with all these companies without having any complexities. The results of this study are presented in the SME Portal framework and web-based application services. The expected result is the creation and implementation of SME-portal framework based on service of web given in this paper.

1. Introduction

Small and Medium Enterprises (SMEs) are expected play a key role in Oman's GDP in the future. In 2017, more measures were taken by both public and private sectors to enhance the role of SMEs. The number of SMEs registered by the Public Authority for Small and Medium Enterprises Development (Riyada) stood at 606 by end of January 2017, bringing the total number of these institutions to 32,441, according to preliminary data released by the National Centre for Statistics and Information (NCSI) [1]. However, there has been a drop in the number of SMEs being registered in the first month of 2018 compared with the same period last year. The new registrations of small and medium enterprises (SMEs) in the sultanate witnessed a marked fall from January-February in 2018 compared to the same period in 2017. According to the monthly data released by the National Centre for Statistics and Information (NCSI), the new registrations of SMEs during the first two months of this year slipped 34.1 per cent to 1,204 units, from 1,826 [2].

SME need to have the right enablers. Here the establishment of web-portal to bring together all the small and medium enterprise (SMEs) that contribute to raising the economy of these companies. Where the portal can also serve the government sectors and facilitate the process of communication between the government and small and medium enterprises. The implementation of this portal will also help in the future: i) Encourage close cooperation between SMEs and government sectors to reduce market access and access costs. ii) the deployment of an online marketplace (with buyer performance guarantees) that provides access to other countries in the region, including the United Arab Emirates, Qatar and Saudi Arabia, leading to an expansion of the market space. iii) to raise the level of competition between small and medium enterprises to provide products of quality and better services [3].

Coordination of cooperative policies and efforts between the Government and the private sector and the allocation of a certain percentage of contracts to SMEs will go a long way in addressing the concerns of SMEs and this will enable them to operate with greater confidence. Thus, creating sustainable opportunities to ensure a win-win situation [2,3].

The latest research is a solution to overcome these problems by developing web-portal framework and implementing it as a portal based on converged web services. Web services are the latest web technologies that can provide information to anyone who wants to consume the information provided, and the access methods available on the web application. Thus, any developer (application developer) can access information and build web applications as he wants easily. This portal will be for small and medium enterprises (SMEs)in Oman, so anyone can get information such as SMEs. The expected result is the establishment of a framework and application of the SMEs-information system portal based on Web Services.

2. Literature Review

Companies must find a new model of business for their development, so as to take better advantage of their own advantages. on same time, with the rapid development of economy and technology of science, the competition between SMEs and large enterprises is inescapable, so it is very important for small and medium enterprises to find best ways to improve their competitiveness. E-commerce is a new

Instrument of trade in this 21st century, in order to promote the quantitative development of small and medium-sized enterprises and enhance the capacity of enterprises to manage risks [4]. By the process of economic globalization and the development of information technology, e-commerce as a new business model is affecting people's lives more and more. The emergence of e-commerce is changing the previous model of business, not only expand the marketing channels of enterprises and reduce the cost of running enterprises; more important is the development of e-business to enhance coordination between upstream and downstream companies in the supply chain, [5] Compared to the traditional model of business, e-commerce is strong, such as simple distribution, low cost, no time constraints and other advantages. At the same time, e-commerce also has less investment benefits, easy to learn, flexible process, etc. [6]. However, SMBs can effectively improve their business performance using e-commerce. According to the report on "E-commerce development of SMEs in China," data show that income has increased significantly in SMEs engaged in electronic-commerce. The growth of trade in small and medium-sized enterprises operating in the field of income has increased significantly, and the growth of small and medium-sized enterprises (SMEs) engaged in e-commerce is approximately 1.35 times that of similar companies that do not participate in e-commerce [7].On the same time, small and medium enterprises (SMEs) tend to ignore the process of building enterprise information, training staff and managerial innovation in the development of e-commerce [8] .Most SMEs rely solely on the creation of a disposable website by a network company, and do not actually use e-business operations for business information. In addition, they do not strengthen supply chain collaboration in this information process, so it is difficult to enhance the efficiency of the project operation through e-commerce. [9]. One study by Michael and Victor the information technology impact on the competitive environment, how to use Internet technology to improve the competitive advantage of enterprises. They pointed out that the formation of information technology to enhance the competitive advantage of the specific method mainly covers three aspects: First, the development of information technology changed the industrial structure. Second, the application and implementation of Internet technology to support the enterprise low cost and comparison strategy; Third, they promote enterprises to develop new business, and fetch more business opportunities to the enterprise [10]. In study for David and Lorna, more than 40 small and medium-sized companies from Canada, China, Japan and Mexico are developing e-commerce in the international market. The result shows that e-commerce can reduce the cost of product and service in an unrivalled way, bringing together information and capital at same time, and then enhancing the competitive advantage of enterprises [11]. Henrik and Luis pointed out that Internet technology has made great contributions to society. At the same time, it has completely changed the traditional methods of marketing and business. In a fierce global competition environment, SMEs must also face an open competition environment - trade is an effective way to grow the competitiveness of small and medium-sized enterprises, while small and medium enterprises also need to meet demand from customers and business partners [12]. Katya and Ayman discuss the impact of e-commerce on SMEs from a diversity business perspective. In the broadband economy, small and medium enterprises interact and communicate with the customer through the platform of network. A good e-commerce platform and technology application is the key to e-commerce implementation in small and medium enterprises [13].

Through these studies it is clear that online trading has positive effects for the growth and development of small and medium enterprises (SMEs). The establishment of a web portal for small and medium enterprises in Oman will help raise the level of economy for these companies. And helps parties that are interested in communicating with small and medium-sized companies easily. This portal will help to raise the economy and increase the commercial competition between small and medium enterprises.

3. Software Methodology

The system development cycle (SDLC) ensures end-to-end solutions according to user requirements in support to strategic of business objectives and goal. It represents a systematic and structured approach aimed at the development of information systems. The SDLC includes a comprehensive checklist of rules and regulations governing systems of IT. These provisions are intended to ensure that developers of the system comply with the different set of evidence. The seven-step SDLC includes seven stages that require rigorous study by developers to ensure that the objectives are met accurately. The phases include Planning, Analysis, Design, Development, Testing, Implementation and Maintenance [14].

A. Software development methodology

Software Development Methodology is a group of guidelines and rules used in the research process, planning, design, development, testing, implementation and maintenance product of software. The methodology also includes core values supported by the project team and tools used in the Planning, Development and Implementation process [15].

This research reviews a set of the most popular methodologies of software development and highlights their basic characteristics. The analysis includes determining the scope of the project that fits the methodology, providing feedback to the project owner and providing a graphical representation of the methodology. For cohesion purposes, the stages described above in SDLC are also used to visualize methodological diagrams.

B. Waterfall

Waterfall is the first methodology generally recognized as dedicated to development of software. Its directors are first described by Winston W. Royce 1970. This methodology has been used to complete SMEs portal project. It features meticulous planning and produces comprehensive documentation. The waterfall methodology is a consecutive linear process where each phase begins only after the previous completion. Each stage has its own outputs. The waterfall methodology is predictable and provides careful planning for the programs and their architecture [15].

C. Technology used of SMEs- Portal

the technology used in the implementation of the SME Portal, the use of an open source platform for Microsoft ASP.NET and other technologies described in the following details.

i. ASP.NET Technology

ASP.NET is framework of a web application, marketed and developed by Microsoft to let programmers to create dynamic Web sites. Allows you to use a full-featured programming language such as [Visual Basic.Net, C#, Jscript, J, ...etc.] to build easily the web applications [16]. ASP.NET works at the top of the HTTP protocol, and uses HTTP policies and commands to set the connection and binary collaboration from the browser to the server [17]. ASP.NET is platform of a web development, it provides a model of programming, Integrated Software infrastructure, and different services needed to build powerful web applications for personal computers (PC), as well as portable devices [18].

ii. C# programming language

C # program language is a modern general-purpose programming language developed by Microsoft and approved by the European computer manufacturers association (ECMA) and the international standards organization (ISO). C # program language is designed for CLI [common language infrastructure], which consists of the implementation code and the operating environment that allows the use of different high-level languages on various computer platforms and structures [19]. At present C# program language is one of the most popular languages of programming. It is used by millions of developers worldwide. Because C # program language was developed by Microsoft as part of the modern platform for application development and implementation, the Framework of .NET, the language is widely distributed among companies of Microsoft-oriented, enterprises, and developers

iii. Microsoft SQL Server 2012

SQL Server 2012 is more than engine of database. It is a set of components that can implement as a group or separately to scalable form, and cloud ready platform of information. In general, terms, the cloud ready platform of information is about two categories: first helps to manage the data, second help to provide business intelligence (BI) [20].

Microsoft SQL Server 2012 is a perfect-featured Relational Database Management System (RDBMS) that provides a diversity of administrative tools to facilitate the burden of Database Development, Administration, and Maintenance. The most commonly used tools are SQL server management studio, SQL profiler, SQL server agent, SQL server configuration manager, and SQL server integration services.

4. Design Framework

Requirement Specification determine what system is required to accomplish it. User case describe the full interactions between the application and users. There are three types of users in this system: administrative users, regular registered users, and unregistered users. We analyses functional requirements using unified modelling language (UML) and User case diagram [21].

A. Use Case diagram

The User Case Diagram is a description of interactions between users and application units. Three types of users use the system. The basic roles for all user groups are different. Typically, administrator users support application management, user management, and evaluations. Corporate users are able to registration, manage products, receive and deliver orders. Users of the customers are able to register and make orders for products and pay online. The use case diagram shows in the figure (2).

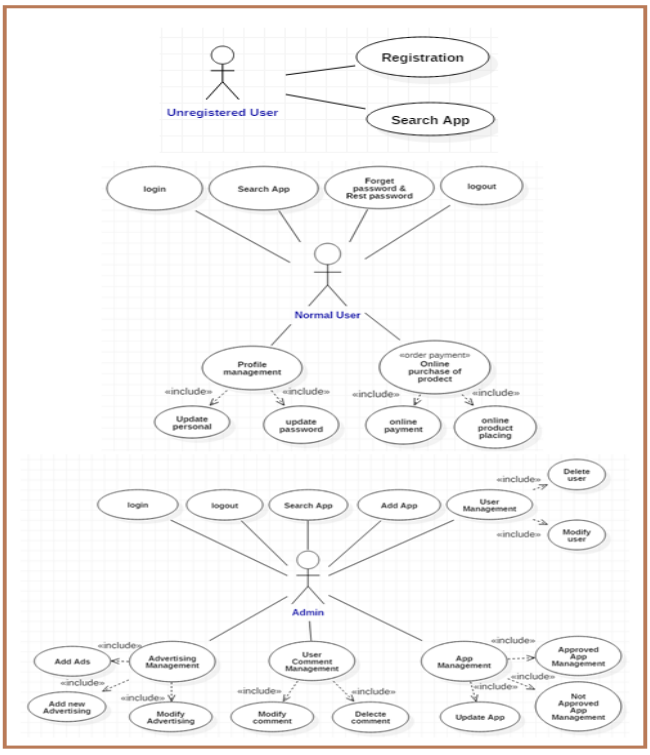

Figure (1) Use Case of SMEs-Portal

B. Class Diagram

The Class Diagram consists of connected classes and interfaces. A class is a definition of behavior, structure, and shared relationships by multiple instances of the class, the objects that are referenced. Figure (2) described the static structure diagram that describes the structure of a system by showing the system's classes of SMEs-portal, their attributes, operations (or methods), and the relationships among the classes. It explains which class contains information.

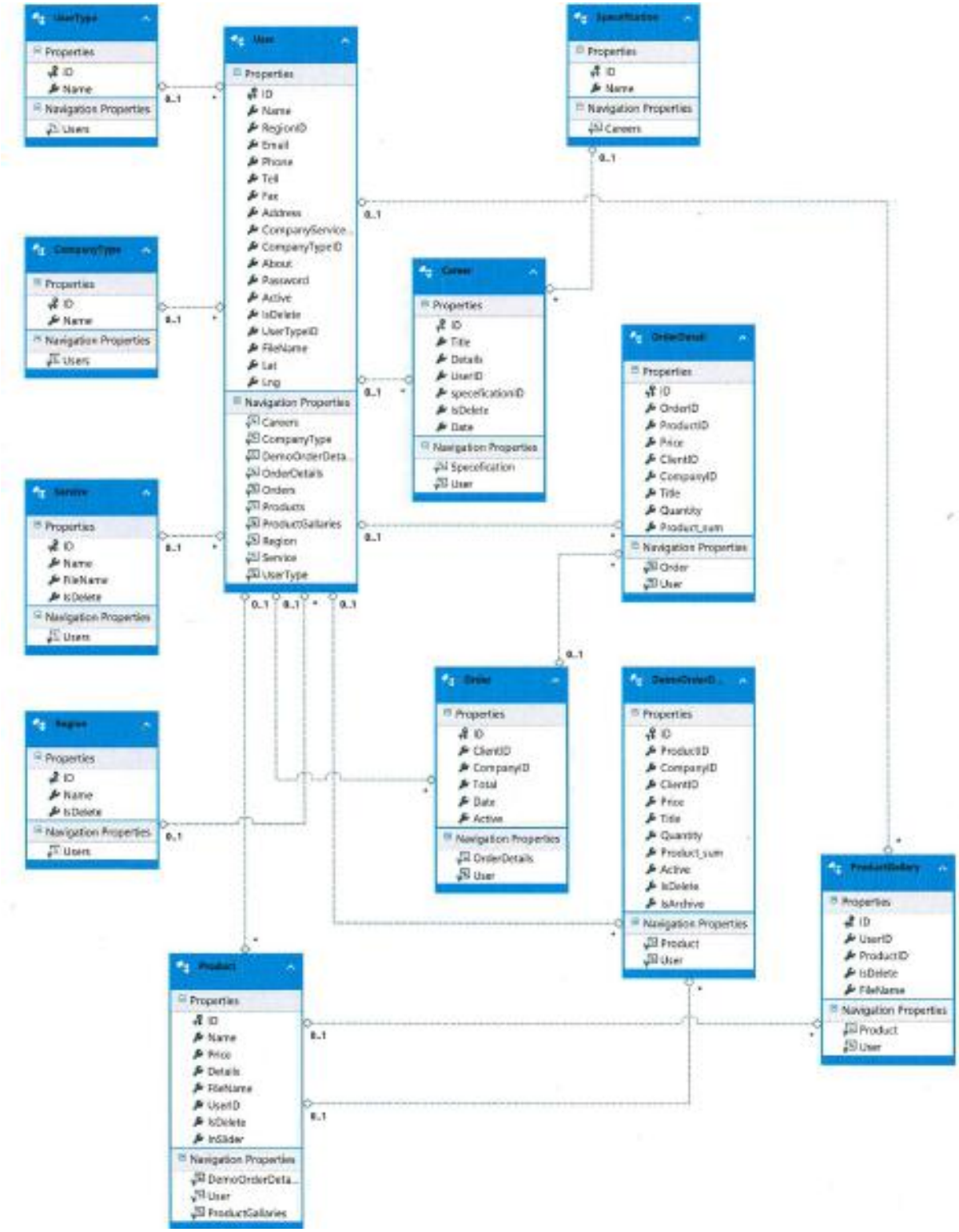

Figure (3) Class Diagram of SMEs-Portal

5. System Result

Because of this work, the SMEs-portal is interactive, flexible and easy to use. After using these amazing and fast responsible things, we can able now to snapshot all these things from this work. Using Visual Studio 2017 and Sql Server 2014.

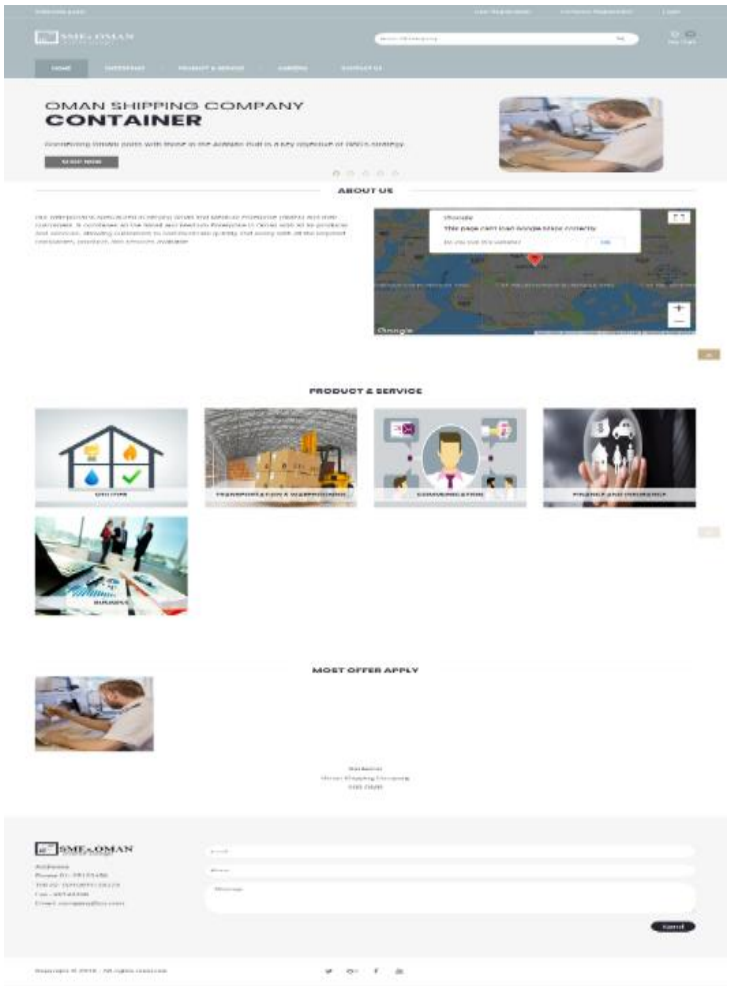

Figure (4): Screenshot of Home page of System

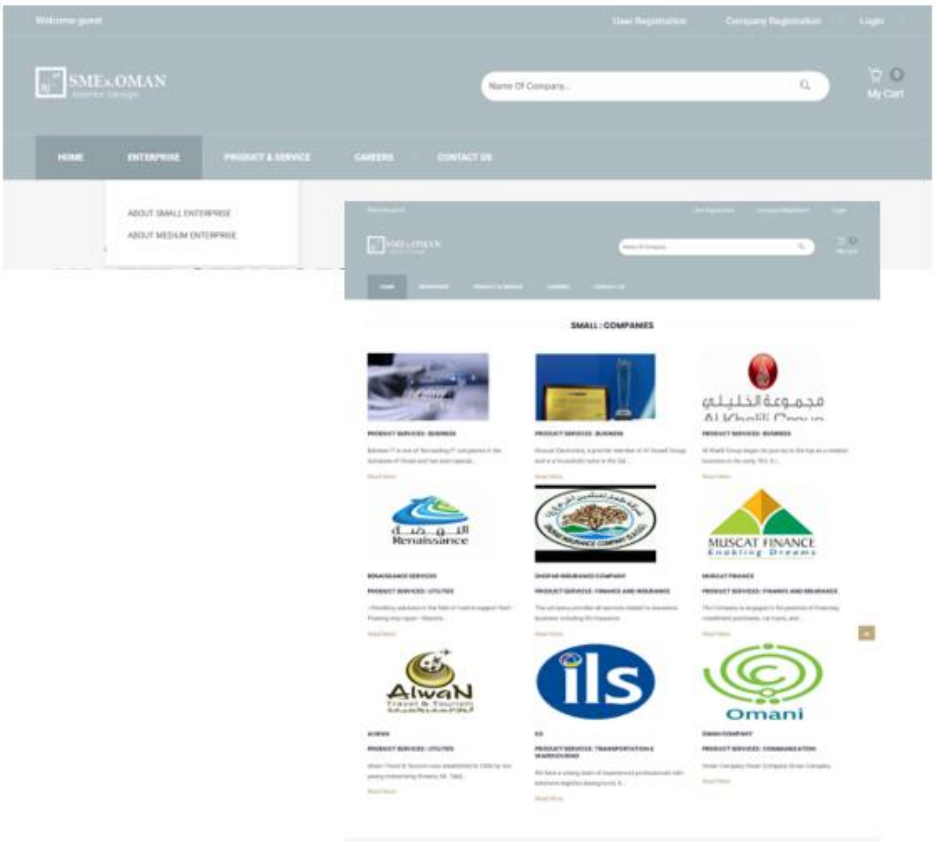

Figure (5): Screenshot of Enterprise page of System

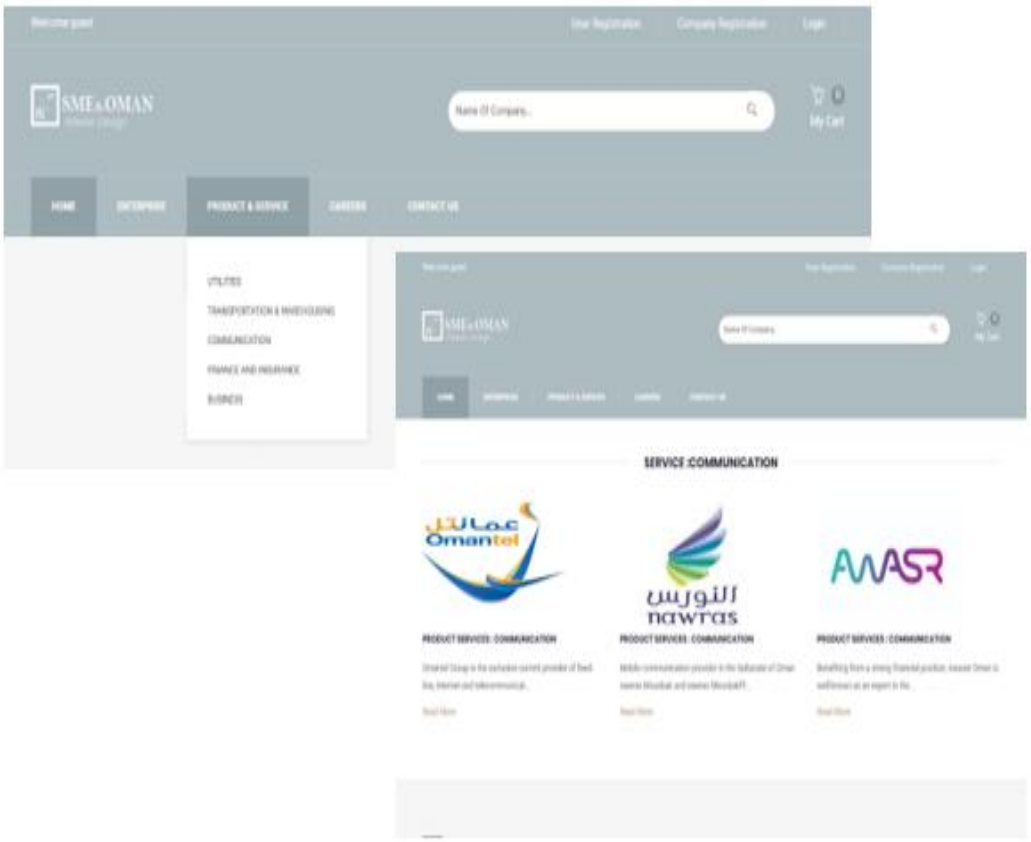

Figure (6): Screenshot of Product and service page of System

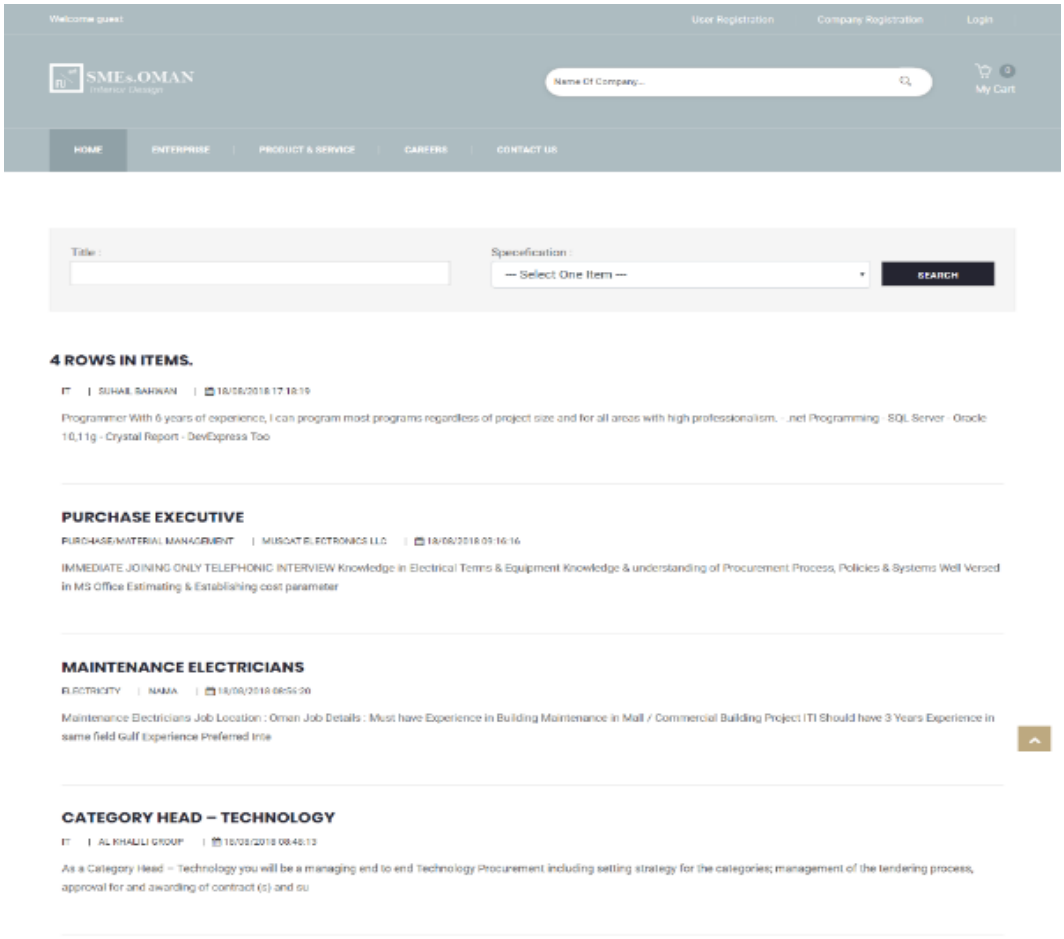

Figure (7): Screenshot of Careers page of System

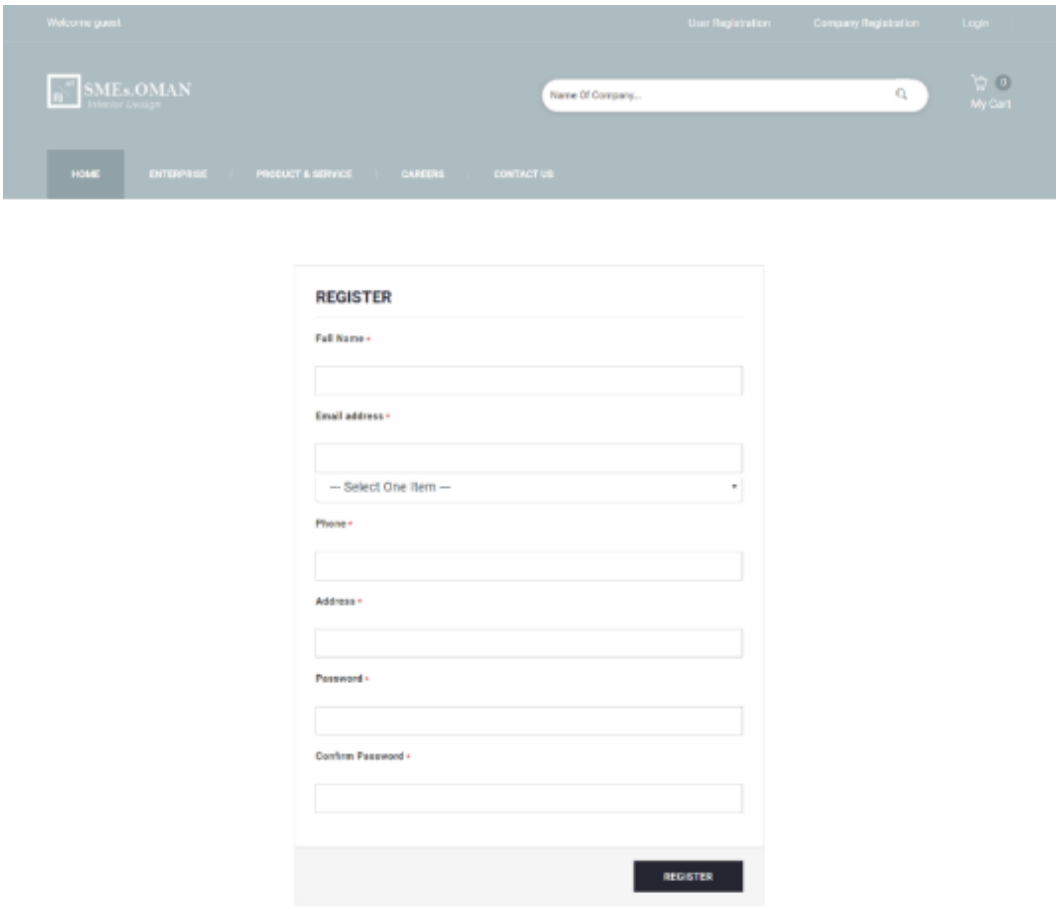

Figure (8): Screenshot of User register page of System

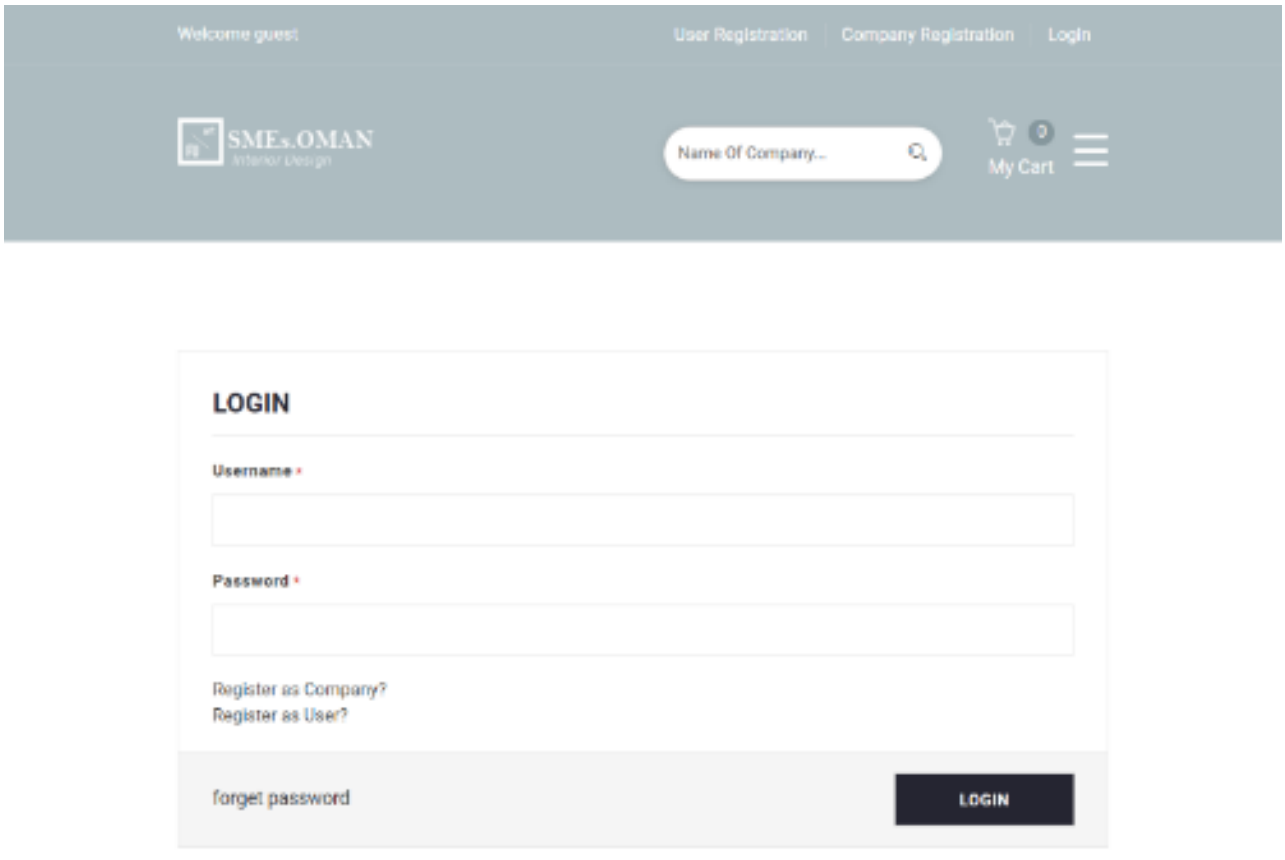

Figure (9): Screenshot of login page of System

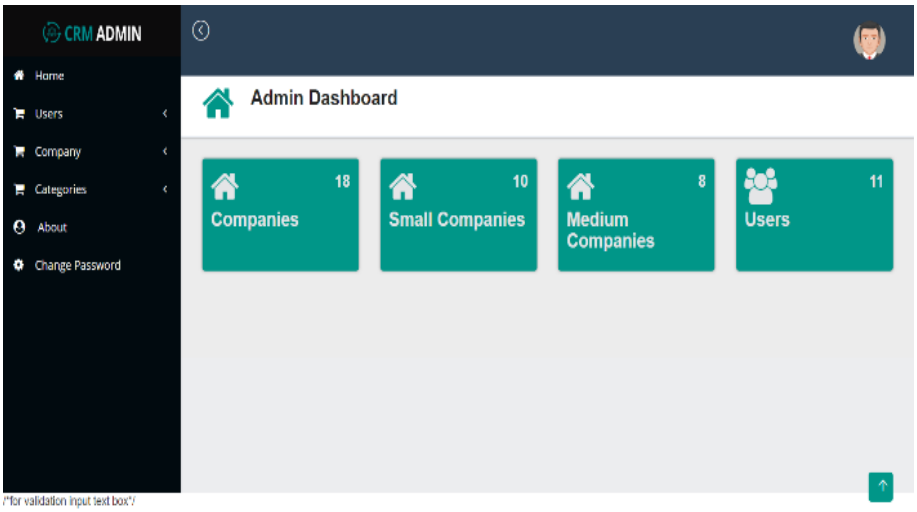

Figure (10): Screenshot of Admin page of System

6. Conclusion

This paper provides a solution to raise the level of the economy of small and medium-enterprise in Oman. It also works to motivate the governmental sectors to support these companies by establishing a portal that brings together all the small and medium enterprises in Oman. This portal was created with modern technologies so that it is flexible and easy to use. In the future, developer can easily develop this portal. Web services that are closely related can provide facilities for small and medium enterprises to promote or distribute information in their possession. The presence of small and medium enterprises makes it easier for the Investors or people who have an interest and want to access and obtain information about SMEs in Oman.

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