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INNOVATIVE POLICY OPTIMIZATION: A CATALYST FOR MULTIDISCIPLINARY BUSINESS AND ECONOMIC DEVELOPMENT IN OMAN

[1]Mohamed Haneefuddin

Abstract: *Innovation in business and economical research is a vital factor that ensures the optimal long term business growth and financial security. The dynamicity in current business scenario has ignited numerous analytical paradigms driving the innovation in product and service quality, business processes and systems. This paper emphasizes over the requirement of innovation policy optimization for higher economical growth and financial security in Omanis multidisciplinary businesses. The prime limitations of present innovation policies have been studied andhypotheses have been defined for existing policies and scopes of policy optimization. A semi-structured interview has been conducted with 89 questionnaires reflecting current economical policies, needs and scopes for policy optimization in Omanis economy. The respondents from varied multidisciplinary businesseslike manufacturing, SMEs, education,skill development, ICT services, corporate consultants and local research establishments have provided their views, which have been processed for data analysis and evaluation using multivariate analysis paradigmwithIBM-SPSS statistical analysis tool. The statistical analysis has been performed using descriptive statistics, one-sample t-test, Pearson Correlation, and Chi-Square test to evaluate relevancy of the data and hypothesis justification. The study concluded that innovation policy optimization in Omanis economy can be a catalyst for competitive quality production and service generation for its higher economical growth and financial security. The study has suggested some policy optimization schemesby incorporating regulated information exchange, resource transfer and mobility, skills development, open innovation supports for local research establishments, financial assistance to institutions and SMEs, public-private collaboration, demand generation and penetration across global market opportunities.*

Keywords: *Innovation, Policy optimization, Multidisciplinary Business and financial research, policy optimization.*

1. INTRODUCTION

Innovation plays a significant role as the engine for the economical growth and its sustainability for long-term in the current competitive market scenarios. In fact business innovation represents a broad paradigm, comprising enhancements is service quality, products, process optimization and system enrichment to deliver

[1] A'Sharqiyah University, Ibra, Sultanate of Oman. *E-mail: m_haneef65@yahoo.com*

optimal solution for competitive market needs. The competitive market also does its best to facilitate incentives for organization to innovate something optimal, by employing its innovative concepts, skilled resources and optimal management as well as calibrated financial investment. It is also encouraged by means of certain network or relationships while exhibiting a cooperative knowledge transfer, resource mobility and provisioning and financial investment to the organizations and institutions. Mutual information sharing and technologies transfer and its optimal management plays very critical role to encourage innovation.

To ensure efficient knowledge transfer, financial supports and resource provisioning across an economy for promoting innovation among organization, policies plays significant role. Taking into consideration of policies as the catalyst for innovation and research in the Sultanate of Oman, this paper, presents a study of innovative research and associated policy optimization scope in Oman for long-term business development and economic growth in its multidisciplinary businesses. Specifically, the optimization in innovation policies and introducing flexibilities towards innovation in the Sultanate of Oman is the centre of the study in this presented manuscript.

Although, with a GDP of $78.11 billion, the Sultanate of Oman is categorized as a country with higher income capacity by the World Bank, however due to the diversity in economical resources and respective uncertain economy, the policy makers of Oman are cautious for its long term economical stability and sustainability. Considering the need of secure economy, even the government is emphasizing over innovation for higher industrial growth and its secure investment in market (Ministry of Omani Industry, 2013). In Omanis manufacturing based economy, few of the emphasized industries are the Alloy industries (Metkore Alloys) that manufactures 1,650,000 tones of alloy annually. The innovations and its standardization in the Ferro-chrome smelter in Oman have played vital role for such achievement, thus motivating policy makes for future initiative towards innovation. An inception made in 2009 for free trade agreement with USA, which has emerged with huge opportunities for economical growth with high productive manufacturing industries and industrial products development in Oman. Petroleum has been the dominant factor of the Omani economy since 1967 (Ministry of Omani Industry, 2013). The high level living standards along with the fundamental needs for its expansive infrastructure, electricity, communication infrastructures, education and medical services are being primarily supported by its oil and natural gas resources with certain defined support from its increased manufacturing sectors. In Omanis economy, service industry has emerged out with recent innovation dynamics and it has realized the impact for research and innovation to compete modern global competitive scenarios.

The recent government planning and Omanis economy has been emphasizing over accelerating productivity, innovation, and science and technology development with higher education standards (World Bank, 2012a). Currently Omanis economy has been trying to maintain its GDP as 3.4% (Doing Business, WB, 2014). The Omanis government has been directing its Five Year Development Plan (FYDP) since 1976 and its eighth FYDP (2011-2015) policies have planned for a major diversification process while ensuring higher roles for private industries for innovation and research (Ministry of Omani Industry, 2013) and more Small and medium enterprises (SMEs) emergence. But still, the conventional policies do find intricacy for innovational motivations. In the eighth FYDP (2011-2015) policy, the Omanis government targets 10% annual GDP growth in its non-oil and non-gas industries. The complete investment in these sectors has been estimated to reach US $ 14.5 billion by 2020. Promoting its light industry, in the recent policies the Omanis government has continued its emphasis on policy for local product manufacturing, agriculture and SMEs. A multidisciplinary business segments such as chemicals, construction materials, polymers, metal products, furniture products, food processing, FMCGs, textiles and leather have been focussed for introducing innovation for its product quality (Doing Business, WB, 2014), (Ministry of Omani Industry, 2013). Still Oman scores its economical rank at 4th position (66) after UAE (22), Saudi Arebia (49) and Bahrain (53) that indicates a stiff competitiveness in its locality (World Bank, 2014). These figures indicate towards the needs of certain policy optimization for innovation to deliver competitive products and services in global market.The Oman Information Technology Authority (ITA), established in 2006, has been moving with a goal to initiate IT initiative and innovation towards digital society, strategic and infrastructure facilitation for multiyear IT project supports as well as local service provisioning with the assistance of Microsoft Corp. USA (FYDP (2011-2015)). Similarly, FYDP (2011-2015)) has also advocated for promoting innovation and quality optimization for its economical components nationwide.

With a goal to accomplish higher business growth and financial security, the policies optimization for varied factors such as global partnership, scientific collaboration, business collaboration, sourcing knowledge, fostering open innovation and national knowledge exchanges, provisioning of competitive markets, enhancements for public sector research establishments along with encouraging business investments in all form of innovation are needed. In fact the functioning and structure of certain innovation system is a prevalent intricacy for policy makers and government entities. Being a collaborative process between organizations, research firms and institutions, innovation can be significantly optimized by introduction of optimal policies and regulations by government in Oman to shape growth, sustainability and dynamism of its economy. A number

of previous researches like (Harper and Becker, 2004; Dodgson *et. al.*, 2005; Cooper and Edgett, 2012), have focussed primarily on the input and output factors of innovation, but still no any extensive work has been done on the innovation oriented policy optimization and its need for Omanis economy.This paper emphasizes on the study of policies for innovation in multidisciplinary industries in Oman and its optimization for better financial growth, sustainability and financial security. In this study, the need of the collaborative policies towards introducing innovation the Sultanate of Oman has been studied. The policy optimization towards its multidisciplinary business segments has been evaluated. A multivariate analysis has been done for prepared hypothesis and questionnaire reflecting current policies and its optimization needs. The research concludes with the requirements of policy optimization in Omanis economy to meet the requirement of competitive quality production and service generation, employability and higher economical growth.

The remaining sections are structured as, in Section II; the literature study for innovation and policies has been presented. Section III studies the research methodology; Section IV presents data analysis which was followed by Conclusion in Section V. The references considered for this research has been given at the last of the paper.

2. LITERATURE REVIEW

Innovation has been defined in varied manners and not a single globally accepted statement has been defined for it till (Read, 2000). On the basis of various factors likenature of research, its significances and applicability, results etc it has got varied definitions. Thus, it becomes inevitable to define the beneficiaries whether the innovator or the people getting benefit out of it and these all are comprised of technological innovations and innovations made by management and financial planners (van de Ven, 1986). The way of offering better services economically with enriched quality has also been stated as innovation (Zawislak *et. al.*, 2009). This categorization of definitions could also vary as per change in the nature of research, organizations and its capability (Ettlie *et. al.*, 1984; Lumpkin and Dess, 1996; Mairesse and Mohnen, 2002; Cho and Pucik, 2005). On the basis of the quality of end product innovation can be defined (Garcia and Calantone, 2002; Oke, 2007). Considering in depth concept of literature (Ettlie *et. al.*, 1984), in this study a definition has been accepted that states that innovation is the efficiency of certain organization to come up with certain innovated outcomes for competitive product quality and services. A number of studies have been conducted for innovation and its influence on economic growth (Adams *et. al.*, 2006 and Phan, 2013). On the basis of key ingredients of innovation and its motivation some researches have

been done (Damanpour, 1991; Capaldo *et. al.*, 2003; Martensen *et. al.*, 2007). Innovations on the basis of outcome were studied in literatures (Chuang, 2005; Alegre *et. al.*, 2006; Phan, 2013). An effort to measure finance oriented innovativeness a model was developed by Chiesa *et. al.* (1996) by employing the auditing of the innovation management. The authors defined multiple key concepts like concept generation, innovation, development and acquisition. Authors also stated that innovation needs certain calibrated innovation policies and practices to make it successful to ensuring secure investment. Still the authors could not relate the impact of policy optimization and its management for economical growth with respect to manufacturing sectors and multidisciplinary business segments in a country like the Sultanate of Oman.

In a research study (Adams *et. al.*, 2006; Brophey *et. al.* (2009).) an integrated model was developed that characterizes the constructs of innovation management and its optimization for economical growth. Authors framed seven factors such as intake, knowledge or information management, innovative strategies and its implementation, organization and functional culture, portfolio, project management and the commercialization of innovation's outcome. These factors somewhere signifies the needs of policy flexibility and management for ensuring financial security and growth in present competitive markets.

With respect to economical growth and associated innovation significances for sustainable economy, some studies were done by (Cassity and Ang, 2006; Etzkowitz *et. al.*, 2000) that emphasized over innovation policies and its relation with educational enhancement in developed and developing countries. Authors in their developed theories stated that countries like the Sultanate of Oman, must be emphasizing on its "own" research and innovation activities without exhausting its most potential and hence, the policies should be reframed to realize its contribution towards sustainable economy. Authors suggested the policy enhancement towards mutual collaboration in science and technologies, calibrated knowledge transfer and financial marshalling for local innovation activities (OECD, 2010, p.149). The prudence based approaches are also considered (Georghiou and Cassingena Harper, 2011) for government policy framing that considers international cooperation for its policy analysis for innovation initiative. Towards policy strengthening study (Niosi and Bellon, 1996, pp.153–154) a model for enhanced policies of technological diffusion, imitation and knowledge transfer the innovation was discussed.

Quality optimization oriented human resource enrichment policy enrichment was advocated by (Nicolae, 2009). For multidisciplinary business rise up, the researcher (Conceicao *et. al.* 2003, p.585) proposed to enhance economical growth the resource quality and educational enrichment is must and through skill

development the competitive quality could be maintained. A knowledge sharing and public-private collaboration was studied by (Burch, 2006) who stated that enriching social capital with proper encouragement can lead to higher research and local innovation initiatives in IT services. Some other researchers have raised varied issues for innovation through ICT for sustainability of developing countries and its social changes towards innovation (Narasimhan, 1984; Avgerou, 1998; Melesse, 1998; Morales-Gomez). Similar suggestions were made by OECD while stating ICT as a potential factor for economic development in developing countries and quality of product optimization to compete in global market. Even the induction of policies for ICT enhancement so as to optimize knowledge transfer and sharing for innovation (Prakash, 2005 and Hendriks, 1999) made a research, concluding with affirmative impact of ICT in innovation.

These literatures stated that all the countries are putting its efforts for bringing technology and innovation to their own nation for making it a sustainable and secure economy, but still to compete with the global competitions the needs of policy optimization towards innovation is must. In case of the sultanate of Oman, these requirements are inevitable and it is must to compete with its economy of uncertainty and confined resources. Even though, numerous studies have been done on Omanis economy but not much focus has been made on innovation policies in Omanis economy. In recent years the variation in the prices of oil resources and tough competition among neighbouring countries (Saudi Arabia, UAE, Jordon, Iran etc) the policy optimization towards quality enhancement and service optimization has been advocated in Omanis economy environment. This is the fact that in Oman there has been emergence of multidisciplinary industries but still there exists approximate 11% of unemployment due to improper skills and lack of innovativeness. To cope up with such situations the policy enhancements for innovation, education, ICT based social digitization, research motivations and investment supports are needed. This study primarily emphasizes on the need of policy optimization for innovations in Oman to compete the global competitive market scenarios.

3. RESEARCH METHODOLOGY

Considering the requirement of policy optimization towards innovation in Omanis economy to enhance its economical growth and making investment secure, the presented paper studies the varied aspects of policy optimization needs in Omanis economy for its prosperity. Initially, the qualitative study was done using interpretive paradigm for retrieving knowledge and information about innovation and research requirement for financial growth and competitive quality production in Omanis economy to penetrate global market. In this phase, in depth study of

Omanis economy, existing innovation strength, policies and its impact on product or service acceptability in global market was done. The data were collected and analyzed from varied sources. On the basis of information collected about present Omanis innovation policies and economical status certain hypotheses were defined to evaluate the need of optimization in Omanis economical policies towards innovation.

A. Hypothesis

H_{01}: Even being a calibrated economical policy, the existing innovation policies of the Sultanate of Oman is not optimal to encourage innovation in its country and hence the policy optimization for Innovation and research can be significant for competitive quality production, higher economy growth, service generation and investmentsecurity.

H_{02}: The innovation oriented motivational support (financial encouragement and flexibilities) and respective policy optimization to local research establishments, industries, international innovation forums, educational institutions and SMEs can be significant for globally acceptable quality production, employability, higher economic growth and financial security.

H_{03}: The policy optimization towards regulatory environment setups, financial flexibilities, public-private collaboration and international information and technology exchange for innovation, can bring fortune in Omanis economy to develop globally acceptable product quality and service generation.

In the next phase, the semi-structured data analysis was accomplished where the interviews were conducted with varied industry experts from manufacturing, education, multidisciplinary SMEs business segments (Yin, 2003; Gibbert *et. al.*, 2008), ICT service, innovation forum and financial advisors etc. In this study a complete 89 questionnaire were prepared and were interviewed with the industry experts. Few questions were specifically designed for education sector specialists and SMEs owners who present their views about current research and innovation policies, allied financial plans in Omanis economy and further scopes for policy optimization towards better productivity, service generation, employability and global competitive quality production. The collected data ware analyzed using multivariate analysis paradigm and respective statistical analysis was done.

B. Research Questionnaires

The predominant questions prepared for the semi-structured interview based study were related to present scenario of innovation and its scopes for established industries, constraints of optimal quality production, current policies of innovation and research in Oman and future scopes for optimization in existing policies so as

to achieve higher economical growth and financial security. The questionnaire framed up, were suitably crafted so as to get feedback from multidisciplinary business segments such as manufacturing, education, financial, multidisciplinary business councilors, retail, SMEs etc. The prime focus of the questions was associated with the need of research and innovation and associated policy assessment for economical growth, employability, financial security and sustainability for the Sultanate of Oman.

Performing a pilot testing by using the multivariate analysis paradigm and its reliability analysis, the responses collected from respondents were sampled appropriately in MS-Excel so as to process it for stratified random sampling paradigm and further statistical analysis. Among requested 89 questions, average 75 questions were found to be replied precisely with rating assignment as per personal agreement. Responded variables were processed and were analyzed in terms of statistical parameters, reflecting toward justification of hypotheses defined in this study. The software platform IBM statistical test package, called IBM-SPSS was used for precise statistical data response processing. The statistical study was performed using descriptive statistics, one-sample *t*-test, Pearson Correlation, and Chi-Square test to evaluate the hypothesis.

4. DATA ANALYSIS

In the presented research model, 89 questionnaires were prepared and a complete 40 respondents from varied Omanis industries were interviewed. Among these respondents 6 people scoring 15% of all feedback percentiles were from manufacturing sector, highest respondents (10) were recorded from SMEs making its maximum interest towards innovation and associated policy optimization. The distribution of respondents and the respective contribution towards study and analysis is given in Figure 1; Manufacturing (6, 15%), SMEs (10, 25%), Education and skills (6, 15%), corporate consultants (2, 5%), ICT services and retails (5, 12.5%), international innovation forum and advisors (1, 2.5%), Omanis research establishments (8, 20%), others (2, 5%). From the complete array of 89 questions, average 67 questions were replied precisely. Considering the personal suggestive capability for public-private policy and scopes for optimization, 85% respondents stated themselves responsible, capable with elementary knowledge of innovation, economy and policy to participate in the interview and rest of the people accepted to have knowledge of innovation and its significance towards better productivity.

A. Causes of Confined Quality in Multidisciplinary Business Segments in Oman

In this phase, the descriptive data analysis for the predominant reasons behind the confined quality of production, global market penetration, and import based imbalanced economy in the Sultanate of Oman was done. The study was done

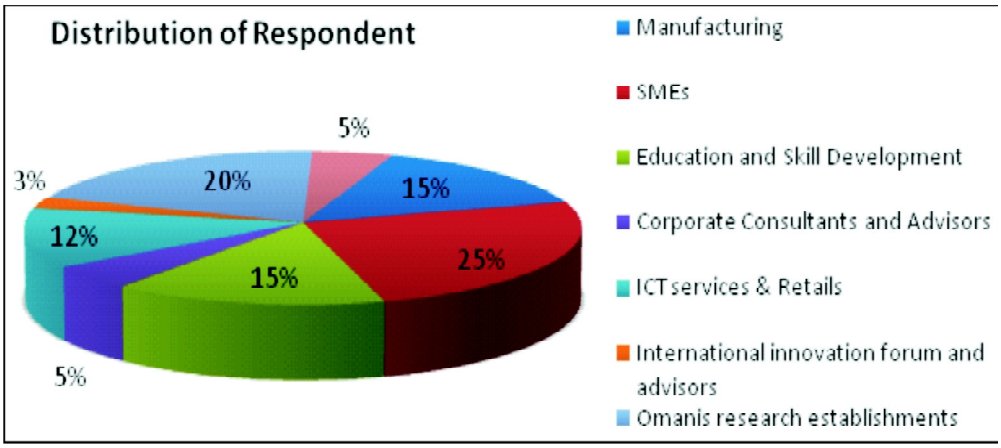

Figure 1: Distribution of respondents from Multidisciplinary businesses

while considering the key factors like conventional skills and resource quality, insufficient motivation towards financial investment and demand creation, lack in adaptability for market dynamism and emphasis on local research establishment and encouragement. The responses for these factors were analyzed for evaluating the hypotheses with statistical analysis using descriptive statistics, one sample *t*-test, Pearson Correlation and Chi-square tests.

Table 1
Descriptive Analysis for causes of confined innovation and product and service quality

	N	*Mean*	*Std. Deviation*	*Variance*	*Skewness*		*Kurtosis*	
	Stat	*Stat*	*Stat*	*Stat*	*Stat*	*Std. Error*	*Stat*	*Std. Error*
Lack of Technological upgradation	5	8.00	14.250	203.055	–.368	.913	–.649	2.000
Lack of Local research establishment	5	8.00	16.667	277.800	1.436	.913	1.317	2.000
Motivation towards innovation	5	8.00	11.358	129.000	.300	.913	–1.817	2.000
Adaptability for Market Dynamism	5	8.00	6.819	46.500	1.012	.913	.446	2.000
Financial Encouragement	5	8.00	10.609	112.56	.777	.913	.407	2.000
Demand Creation and global market penetration	5	8.00	8.103	65.656	–2.043	.913	4.393	2.000

From the retrieved descriptive analysis results, it is clear that lack of local innovation and research establishments has higher standard deviation (σ = 16.66673) followed by the lack of technical upgradation in existing

manufacturing industries (σ = 14.250). Similarly, the deficiency of motivation (σ = 11.358) and encouragement (σ = 10.6095) can also be visualized as key factors that confines global competitive quality production and service generation in Omanis economy.

Table 2
One-Sample *t*-test

	Test Value = 1					
					95% Confidence Interval of the Difference	
	t	*df*	*Sig. (2-tailed)(p)*	*Mean Difference*	*Lower*	*Upper*
Lack of Technological upgradation	4.551	4	.010	29.000	11.31	46.69
Lack of Local research establishment	3.891	4	.018	29.0000	8.305	49.695
Motivation towards innovation	5.709	4	.005	29.000	14.90	43.10
Adaptability for Market Dynamism	9.509	4	.001	29.0000	20.533	37.467
Financial Encouragement policy	6.112	4	.004	29.00000	15.8265	42.1735
Demand Creation and global market penetration	8.003	4	.001	29.000	18.94	39.06

The difference in the respective *p*-value for all the parameters reflects the fact of differential interpretation. The *p*-value of the lack of technological upgradation is .010 and local research establishment is .018 ($p > 0.01$) which states that the lack of technological upgradation are statistically significant. Then while, higher significance value can be visualized with the demand Creation and global market penetration (0.001). The retrieved *p*-value for majority of the cases is ultimately found to be less than standard 0.05, which states the rejection of null hypotheses on these factual conditions that

> "There exists certain gap and lack for motivation, financial flexibilities, and encouragements, policy optimization for innovation, technology upgradation and financial flexibility in Omanis economy that could confine its economical growth".

It advocates the need of policy optimization in the economy of the Sultanate of Oman.

The Pearson Correlational Coefficient Analysis(PCA) as depicted in Table 3, studies exclusively the connectivity of the causes of confined productivity and lack of innovation in the Sultanate of Oman. As depicted, that higher Pearson Coefficient values for the lack of technological upgradation issues, demand creation and global market penetration (0.836) are the significant one. Similar behaviour could be found for lack of local research establishment and adaptability for market dynamism (0.636). Amusingly, a closer look into this data analysis exhibits negative

Table 3
Pearson Correlation Analysis

		Lack of Technological upgradation	*Lack of Local research establishment*	*Motivation towards innovation*	*Adaptability for Market Dynamism*	*Financial Encouragement policy*	*Demand Creation and global market penetration*
Lack of Technological upgradation	Pearson Correlation	1	.385	–.175	.733	–.140	.836
	Sig. (2–tailed)		.522	.779	.159	.823	.078
	N	5	5	5	5	5	5
Lack of Local research establishment	Pearson Correlation	.385	1	.524	.636	–.644	.492
	Sig. (2–tailed)	.522		.364	.249	.241	.400
	N	5	5	5	5	5	5
Motivation towards innovation	Pearson Correlation	–.175	.524	1	.537	–.044	–.183
	Sig. (2–tailed)	.779	.364		.350	.945	.768
	N	5	5	5	5	5	5
Adaptability for Market Dynamism	Pearson Correlation	.733	.636	.537	1	–.092	.565
	Sig. (2–tailed)	.159	.249	.350		.883	.321
	N	5	5	5	5	5	5
Financial Encouragement policy	Pearson Correlation	–.140	–.644	–.044	–.092	1	–.045
	Sig. (2–tailed)	.823	.241	.945	.883		.942
	N	5	5	5	5	5	5
Demand Creation and global market penetration	Pearson Correlation	.836	.492	–.183	.565	–.045	1
	Sig. (2–tailed)	.078	.400	.768	.321	.942	
	N	5	5	5	5	5	5

correlation values in numerous situations depicting fewer similarities. Considering these facts it can be found that the reason behind the confined innovation efforts in Omanis economy is actually not found much significantly similar from the perception shared by the respondents from multi-disciplinary business segments. Similarly, the study made for Chi-square test analysis also advocates towards the rejection of null hypothesis in this case study. Thus, analyzing the data responses and statistical significances all the defined hypotheses were found justifiable.

B. Existing Government Policies for Research and Innovation in Omanis Economy

In this study the existing government policies for innovation towards higher economical growth and stability has been done with predominant research variables, like innovation opportunities facilitation, motivations based on financial assistances and flexibilities for institutions, industries, SMEs and other local establishments, and regulatory policies for fair and transparent innovation and research activities for quality production and service generation.

Table 4
Descriptive statistics existing government policies for research and innovation in Omanis economy

	N	*Mean*	*Std. Deviation*	*Variance*	*Skewness*		*Kurtosis*	
	Stat	*Stat*	*Stat*	*Stat*	*Stat*	*Std. Error*	*Stat*	*Std. Error*
Innovation Opportunity	5	8.000	12.400	153.778	.293	.913	–2.099	2.000
Financial assistance and encouragements	5	8.000	15.553	241.889	.606	.913	.647	2.000
Regulatory Policies	5	8.000	14.185	201.219	.476	.913	–2.997	2.000

Table 4 represents the government policy constructs towards financial flexibilities, regulatory policies and other policies defined for innovation opportunity facilitation in Omanis economy. The descriptive analysis result exhibits higher standard deviation for financial assistance and flexibilities for SMEs, R&D establishments, industries, institutions etc. followed by regulatory policies, and then innovation opportunities. Similar pattern of data is also found for variance. Here the positive skewness as well as kurtosis figures reflects towards asymmetric distribution with a long tail to the higher values. This analysis emphasizes over the fact that to what extent the existing government innovation and research policies are assisting its economy and production quality to strengthen its economical growth and global acceptability. The higher standard deviation for financial assistance and flexibilities for SMEs, R&D establishments, industries, institutions etc, essentially depicts the significance, which was analyzed using one-sample *t*-test.

Table 5
One-Sample *t*-test

	Test Value = 1					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)(p)	Mean Difference	Lower	Upper
Innovation Opportunity	5.229	4	.006	29.000	13.6024	44.3975
Financial assistance and flexibilities for SMEs, R&D establishments, industries, institutions etc.	4.169	4	.014	29.000	9.69	48.31
Regulatory Policies	4.571	4	.010	29.000	11.3868	46.6132

Here, it can be found that *t*-value is maximum for highest for Innovation Opportunity (t = 5.229) which is followed by regulatory policies (t = 4.571) and Financial assistance and flexibilities for SMEs, R&D establishments, industries, institutions (t = 4.169). Since, the p-value for financial assistance (p = .014) and regulatory policies (p = .010) are less than 0.05, hence it states and supports by rejecting null hypothesis that the policy optimization by government and industries for innovation and research is optimal and sufficient for Omanis economical growth. Meanwhile, the PCA states that the policies for financial assistance and regulatory policies are quite significantly correlated. Then while, innovation opportunities possesses less correlation. It states that even though financial possibilities as well as regulatory policies do exist in the economy of the Sultanate of Oman, there is certain deficiency of opportunities for innovation. Here, it can be predicted that the government and the policy makers must be reframing and optimizing the policies for demand generation for innovation so that it can be motivated in Omanis economy. For Chi-Square analysis, it was found that the majority of the parameters were statistically significant but still with its own significance, which represents that governmental policies and assistance is highly discrete in the sector of research and innovation in Omnis economy. The analysis results exhibits that even though the existing government and industrial policies as well as investment towards innovation and research exists significantly, but still it is not enough for accomplishing higher economical growth, global competitive quality production and service generation. The optimization in these policies could increase employability and higher service generation for its local establishments in Omanis economy scenario.

In this study and the data analysis, the other predominant factors such as information and technology exchange, skills development for human resources, encouragement to SMEs and local research establishments have been found to be

significant for enriching Omanis economy. These all factors needs certain optimization in the existing innovation and research policies and optimized financial encouragement and supports towards quality production and competitive market expansion. The results stated that the regulator policies to encourage industrial contributions towards innovation can be significant for opportunity generation and globally acceptable quality production.

On the basis of above mentioned study and data analysis, it can be stated that even though the existing policies in the Sultanate of Oman has given priority and support towards innovation in its growth oriented economical policies, but still it needs numerous optimization so as to enhance economical growth and global market penetration with its quality products, services and resources. Specifically, the policy optimization is must for SMEs, local establishments and universities along with public-private investment and collaboration. It would not only motivate the local establishments towards innovation but also the employability could be enhanced resulting into sustainable and stable economy.

C. Policy Optimization in the economy of the Sultanate of Oman

The data analysis made in this study has precisely stated that the policy optimization for research and innovation in Omanis economy can play a role of catalyst for higher growth and economical stability. Some of the policy optimization scopes and respective significances have been given as follows:

Policy optimization for institutional Support

The flexible and dynamical policies for innovation funding, institutional centralization with research coordination and skills development policies can have fruitful outcomes for motivating institutions towards innovation. Regular evaluation of policies can eliminate the issues caused due to economical dynamicity and insufficient skills. Dynamical policies can make Omanis economy adaptable for any economical changes. Institutional centralization and public-private information exchange can revolutionaries the innovation and competitiveness and SMEs for innovation.

Legal framework based policy optimization

The policy optimization for economical growth oriented regulation, promotion for fair competition in SMEs and local innovation establishments, transparent and globally reachable coordination frameworks, research regulationsetc can have significant effects. The incentive structure based growth oriented regulations for innovation can have affirmative results. The policy optimization in existing agency laws can motivate entrepreneurs to step ahead for investment and service generation, especially SMEs.

Financial assistance and regulation policy optimization

The policy reframing and calibration towards investment, public-private investments, investment security and tax exemptions, etc can motivate local Omanis research establishments (institutions and SMEs) to grow up with higher quality production and service generation. Certain strict policy for commercial banks responsibility to fund for innovation can also encourage entrepreneurs for innovation. Certain professional feasibility study and standard based financial support for SMEs or entrepreneurs can be wise steps towards employability and technological development.

Information and technology exchange policy optimization

Establishing certain optimal and transparent regulatory board for information exchange and technology transfer across globe can motivate and strengthen industries and local research establishments to upgrade technology without intricacies. The skills development and resource exchange can also enrich resource quality for higher productivity and growth. The private public collaboration with dedicated "investment for innovation" plan can be a motivation for SMEs and local research establishment and industries to upgrade its technology.

Opportunity, Demand and service creation policy

The opportunity creation and demand generation can have comparative effect on the innovation and service quality. Wider global market reachability and penetration could have proportional quality production and resource engagement, resulting into higher economical growth and multidisciplinary business expansion in the Sultanate of Oman.

On the basis of hypothesis and primary data analysis from questionnaire based statistical results evaluations, some other innovative policy optimization could also be defined such as, motivating people for innovation, encouraging for broad and proper technical education and skills acquisition, introducing tertiary education system for innovation and research, exploiting international quality resources and talents through dynamical immigration policy optimization. Some other policy optimization scopes are unleashing research and innovation in local as well as internationally collaborated research establishments through flexible and favorable financial supports, intellectual properties (IPs) protection etc. Social and educational awareness programs for innovation can motivate graduates to innovate new technologies and services and converting those ideas into application can be significant for both public as well as industry. Ensuring security for innovation investments can lead to encouragement for more investments. In order to make the innovation policy more effective certain centralize coordination unit can be

framed, which would be in communication with the local as well as international research and development programs and the industry needs. This monitory unit can be a single point for interface between government and entrepreneurs, SMEs or institutions, etc.All the advocated policies optimization for innovation and research in the multidisciplinary business segments of the Sultanate of Oman required should cope-up with the dynamical economic situations and structure and the policy optimization should be made on the basis of robust evaluation.

5. CONCLUSION

Taking into consideration of the global competitiveness and sustainability issues, in recent years the Omanis economy has improved itself with multidisciplinary business segments that comprise not only natural gas and oil resources or conventional manufacturing sectors, but also on the other segments such as SMEs, services, ICT services, tourism, retails and education. Considering global market threat for market retention, quality production, employability, competitiveness and global resource acceptability, the reformation in existing policies towards product quality optimization and service generation has been realized. The prime objective of this study was to analyze the present economical scenario of the Sultanate of Oman and the requirement of its policy optimization towards innovation and research for optimal quality production, service generation and resource enrichment. This study has emphasized over the requirement of innovation policy optimization for higher economical growth, competitive quality production and sustainability for higher global market penetration. Here, a qualitative study as well as semi-structured interview based empirical study has been done with certain defined questionnaires specially designed for the need of policy optimization for innovation and research in Omanis economy. The prepared questionnaire has focussed on the key causes of confinement in innovation in Omanis economy and the need and significance of policy optimization for quality production and service generation resulting into higher economical growth.

In this study, the policy optimization for innovation and research and its significances towards manufacturing sectors, ICT, retails, SMEs, employability and service generation has been studied. A complete 89 questionnaire has been prepared and a semi-structured interview has been conducted where the respondent from varied industries such as, manufacturing, SMEs, education and skills development, corporate consulting and adviser firms, ICT sectors, Omanis research establishments and international research forums were interviewed and respective responses were collected and sampled for further analysis. The collected data has been processed for multivariate analysis using Excel and IBM-SPSS statistical analysis tool. The statistical evaluations were done by analyzing processed results

in terms of descriptive statistics, one sample *t*-test, Pearson Correlation and Chi-square tests. The analysis has been done for varied factors such as lack of innovation in Omanis economy, reasons for confined quality production, and service and income generation from non-oil, non-gas businesses and global acceptability threats, existing limiting factors and future policy optimization requirements.

The analysis results states that the Omanis economy needs optimal policy optimization for higher growth and secure investment. The financial supports to SMEs, skills development sectors, universities and local research establishments can be significant for enhancing not only the quality skilled resources but also the employability can be enhanced and it can be a significant steps towards Omanis economy which already have approximate 11% of unemployebility. The policy optimization for information and technology exchange, public-private collaboration for innovation, public-private investments, service and demand generation and financial flexibility could be critical to accomplish higher economical growth and global competitive product and service generation. The innovation policy optimization for SMEs can have long run advantages for Omanis economy and it would not only play vital role for quality services provisioning but also can motivate for investment. The enhancement in the regulatory policies for international innovation and monitoring can have significant role in quality oriented technological upgradation, resulting into higher productivity and growth. The encouragement for innovation with scientific and technological breakthrough while employing the calibrated policies for public investments for research, encouragements for investments and connectivity among innovators and marshalling financial resources to take global competition and business growth, need certain policies optimization for higher outcomes. Thus, the research and study concludes that the policy optimization for innovation and research can play a role of catalyst for the development of multidisciplinary business segments of Omanis economyresulting into higher growth and secure investment.

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