ISSN 0351-3564

INTERNATIONAL CENTER FOR
PROMOTION OF ENTERPRISES

PUBLIC ENTERPRISE

Half-yearly Journal

Vol. 23, No. 1

THEMATIC EDITION

SERVICE INNOVATION AND SERVICE QUALITY IN THE PUBLIC SECTOR

International Center for Promotion of Enterprises

PUBLIC ENTERPRISE

Half-Yearly Journal, Vol. 23, No. 1, 2017

SERVICE INNOVATION AND SERVICE QUALITY IN THE PUBLIC SECTOR

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Published by the International Center for Promotion of Enterprises
Dunajska 104, 1001 Ljubljana, Slovenia, EU
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www.icpe.int

ISSN: 0351-3564

<https://doi.org/10.21571/pehyj>

<https://doi.org/10.21571/pehyj.2017.2301>

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Foreword

The aim of *Public Enterprise Half-Yearly Journal* is to disseminate high-quality scholarly research and add to the pool of knowledge on the subject of public enterprise by publishing theoretical and empirical academic articles in the field of governance of public enterprises.

Global competition, market liberalization, technological breakthroughs, and rapid development of information technology – have all led to the creation of a complex working environment, in which the organizational goals and objectives of public sector enterprises have started becoming more and more similar to those of private sector organizations. This, in turn, has translated into increased pressure for the public-sector organizations to deliver quality services as well as innovative services, all in an attempt to improve their overall efficiency. It is not too bold to say that over the past decades, despite their social nature and interest – reflected in the unique operational and strategic concerns –, the public sector has actually made great efforts in adopting business excellence thinking. As such, service innovation and service quality are areas of growing interest to both management practitioners and scholars, with a significant body of research focusing on the measurement of the same.

This Special Issue on Service Innovation and Service Quality in the Public Sector of *Public Enterprise Half-Yearly Journal* includes five research articles by authors from India, Peru, and the United Arab Emirates. It spans a spectrum of research areas such as private and government hospitals; hospitality sector and tourism; private equity innovation management and innovation standards; valuation, and investment; and human values-based service quality and innovation.

Private equity funds have played a major role in fuelling the global economic growth. In the paper titled “*Some Reflections on Private Equity: Trends, Valuation, and Challenges*”, N. R. Parasuraman and Ullas Rao aim to contribute to the field of private equity by reviewing the existing literature and identifying the gaps surrounding the poor treatment of valuation models popularly adopted by private equity firms. To this aim, the authors seek to delineate on the three significant aspects pertinent to private equity funds with specific reference to their operational strategies in emerging market economies like India. The authors construct two simplistic models with a hypothesized scenario, which is as well applicable for private equity firms in a realistic setting. The novelty of contribution lies in the fact that the paper makes a valuable attempt towards capturing the underlying financial rationale behind the operation of some of the most successful private equity firms.

Managing quality within the healthcare setting is a challenging task due to its complexity. In the paper titled “*A Comparative Study of Competencies of Doctors Working in Private & Public Hospitals – An Indian perspective*”, Sujit G. Metre and Muktai M. Chavan aim to understand the role of doctors and compare the competencies of doctors working in private and public hospitals. The authors further determine the relationship between the competency of doctors and the quality of service, along with the patient satisfaction. Among others, the findings reveal that the state-owned hospital doctors are more flexible and open to other people’s ideas. The findings of the study have potential managerial

implications, as they can serve as guidelines for government doctors and their private counterparts in understanding the skills necessary for effective doctor-patient relationship. In this sense, both private and public-sector hospitals can redesign their policies and practices to ensure the quality of services offered to their patients.

The existing innovation models, methods, and processes for MIM3 lack a holistic focus and are concerned mainly with the creativity processes and the technical aspects related to the making of the products, leaving aside the value generation, which nevertheless should be the basic and the most important focus of innovation management. In the paper titled “*MIM3: Methodology of Innovation Management for Obtaining the Level 3 of I2MM*”, Emigdio Alfaro aims to develop a methodological proposal for improving the management of the innovation maturity for obtaining the level 3 of the Integrated Innovation Maturity Model (I2MM). The proposed MIM3 methodology integrates the generation of ideas of innovative projects in a manner which is aligned with the strategic planning of the organizations in accordance with the organizational purposes and goals. Its practical implications lie within, since due to its holistic focus and generic approach, MIM3 could be applied to diverse types of public and private organizations.

The hospitality industry is regarded as one of the fastest growing industries in the world, being also one of the world’s largest employers. In the paper titled “*Labour Intensity and Skill Gap in the Hospitality Sector: A Study in South India*”, K. R. Suprabha, Krishna Prasad, and Sridev investigate the trends, constraints, and opportunities faced by the hospitality sector in three selected districts in South India, in light of the enormous changes taking place in the economy. To this aim, the authors employ principal component analysis, OLS regression, and non-parametric tests. The study contributes to the discussion on the importance of skill development and articulates the factors influencing the skill gap in the hospitality sector in the Indian context. The paper also studies the relationship between skill gap articulation, improvement in infrastructure, growth in wages, age, leverage, investment, total employee strength, and skill gap.

Being a large economic entity, the public sector is expected to play an important role in the world economy. However, in the globally competitive open economy, the public sector has not been able to realize its true potential due to poor service quality and innovation. In the paper titled “*Service Quality and Innovation in the Public Sector: A Human Values-Based Spiritual Framework*”, N. Sivakumar studies the drivers, barriers, and enablers of the service quality and innovation of the public sector from a human values-based spiritual perspective. The author aims to show that the human values-based spiritual perspective can provide sustainable solutions for improving the service quality and innovation of the public sector, so that it can regain its position as a pre-eminent solutions provider.

The many academics and researchers who contributed articles and the experts within the field who reviewed the articles have made this *Special Issue on Service Innovation and Service Quality in the Public Sector* of the *Public Enterprise* journal possible. We wish you, our readers, informative reading!

Vincent Charles
Special Issue Editor

Some Reflections on Private Equity: Trends, Valuation, and Challenges

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Received December 2016; Revised May 2017; Accepted June 2017

Abstract

Private Equity (PE) has been hailed as one of the most significant sources of capital for enterprises (private in particular) in order to expand business activities both in terms of scale of operations and scope of activities. Unlike Venture Capital (VC) funds, PE funds focus more predominantly on middle-sized businesses that demonstrate enormous potential for growth and expansion. As the major shareholders of PE funds seek to earn attractive rates of return on their investment, it becomes imperative for these funds to be very selective in picking most suitable candidates for investment. The business model of a typical PE fund revolves around taking a strategic stake in the target firm, which is complemented with a representation in the board in the form of a directorial position. PE funds envisage bringing about operational and structural changes in the target firm with an ultimate eye on enhancing the value of the firm. Typical investment horizons for PE funds vary between 5 to 10 years with popular modes of exit being: Public floatation of stock (as in IPOs), Management buyouts, and Acquisitions. In this paper, we seek to delineate on the three significant aspects pertinent to PE funds with specific reference to their operational strategies in emerging market economies like India. Most significantly, the novelty of contribution lies in the fact that the paper makes a seminal attempt towards capturing the underlying financial rationale behind the operation of some of the most successful PE firms. This has been underscored by laying out a practical demonstration of the two of the most popular computational mechanics adopted by a majority of the PE firms – IRR and CAPM IRR approaches. The same have been analysed critically from a practitioner's perspective in order to further invigorate a debate among academics and practitioners about the suitability of valuation approaches as seen from the prism of PE firms.

Keywords: Private equity, valuation, investment.

Reference to this paper should be made as follows: Parasuraman, N. R. and Rao, U. (2017). Some Reflections on Private Equity: Trends, Valuation, and Challenges. *Public Enterprise*, 23(1), 1-15. <https://doi.org/10.21571/pehyj.2017.2301>

Introduction

Private Equity (PE) funds have played a major role in fuelling the global economic growth. By their ability to pick strategic stakes across enterprises operating in different life-cycles, PE funds continue to drive the growth of enterprises and industries. The traction gained by virtue of infusion of capital across the enterprises represented by diverse industries ultimately contributes in aiding overall economic growth. This is evident from the fact that the total capital invested by PE funds in India increased from a modest \$US 2 billion in 2005 to robust \$US 12.4 billion in 2014, registering a CAGR of 22.47% (see Figure 1). The fact that during this period the Indian economy witnessed a stable economic growth rate meant that PE funds have found enormous opportunities across diversified sectors in their quest towards generating attractive rates of return.

Figure 1. Growth in PE funds over 2005–2014.

Interestingly, the number of PE deals over 2013-2014 witnessed a growth rate of 34%, while in terms of value it was 23% for the same period (Grant Thornton, 2014). A significant contributor to the growing expanse of the PE funds in India has been the ubiquitous “E-commerce sector”. With the likes of Flipkart, Snapdeal, and Yepme dominating the Indian consumer psyche, PE funds have taken big bets on some of the most promising e-ventures. Considering the fact that E-commerce market has witnessed a steady growth rate of 34% since 2005 with an estimated 38 million active online shoppers generating some estimated sales of \$US 2 billion in 2015, it is only reasonable to expect the PE funds to continue to take aggressive positions in

India's resurgent E-commerce ventures (McKinsey & Company, 2012).

Notwithstanding the allure of E-commerce ventures, PE funds in recent times have come under intense pressure to seek viable exit routes. Given that a typical investment horizon for a PE fund does not normally exceed 10 years, the majority of the PE funds have already reached their terminal investment horizon with an exit option looking imminent. The subdued investors' sentiments in the capital markets led by cautious global economic outlook has meant either postponement or a change in strategy in the efforts towards taking the privately held e-commerce ventures public. Concerns ranging from negative bottom-line (in spite of healthy growth in sales revenues) coupled with the uncertainty arising on the front of tax promulgations as applicable for online retail ventures have made investments by PE funds look riskier.

In keeping with the above arguments, the present paper seeks to explore the operations of PE firms by primarily focusing upon the divergent approaches to valuation adopted by PE firms. This assumes significance as financial commentators believe that the complexity of valuation models only goes on to expose the gullibility of general investors in respect of their understanding with the models being perceived as some kind of a "Black-Box". Consequently, a major thrust of the paper rests upon enlightening the investors on the financial rationale behind the employment of some these complex models.

In order to achieve the above overarching objective, we construct two simplistic models with a hypothesized scenario, which is as well applicable for PE firms in a realistic setting. Another highlight of the paper is that while retaining the simplistic presentation of a complex model, the underlying rigour has not been compromised.

PE Funds in India: Sector-Wise Representation

Apart from concentration in the IT/ITES/Online Retail sectors, in recent times, PE funds in India have also invested in diverse set of industries represented by the following: Pharma, Healthcare & Biotech; Retail & Consumer; Banking & Financial Services; Real Estate; Education; Media & Entertainment; and Manufacturing. Major PE funds, as part of their investment strategy seek to identify promising ventures across diversified industries; the selection of which to a very large extent is influenced by the ominous cash-flow pattern. For instance, PE funds have traditionally invested in promising health-care ventures including diagnostic services that have employed technology as their major partner towards delivering quality health services¹. Funds infused by the PE players have traditionally been utilized towards expansion of the units both horizontally (additional services) and vertically (geographical expansion). The stability of cash-flows in the health-care sector has meant that PE funds are lesser exposed to a lesser degree to the vagaries of fluctuating cash-flows reminiscent in cyclical industries, such as Real Estate and Manufacturing.

Table 1 (see below) presents some interesting statistics. The growing clout of the traditional industries in attracting PE investments is clearly evident. Even though a distant second, Energy & Natural Resources over the period from 2005–2014 witnessed 175 deals totalling a deal value of \$US 9.1 billion. With all the talk by the present government towards giving impetus to renewable energy predominantly represented by Solar and Wind energy, the sector with its promising opportunities is expected to witness bolstered investments going forward.

Real Estate and Telecom sectors in general have traditionally been impacted by the cyclical movements of the economy. The heightened competition reflected in the Telecom sector particularly in the Indian context (with extremely competitive AR-PU²) renders the selection process of suitable investment candidates by PE funds extremely complicated. Nevertheless, the two sectors have witnessed robust PE activity over the last ten years both in terms of number and value of deals completed.

Banking & Financial Services sectors has been the 5th most active sector among the PE funds in India witnessing a total of 311 deals clocking a deal value of \$US 6.4 billion over 2005–2014 period. With the Reserve Bank of India (RBI) granting two Universal Banking licences and Small Finance Bank licences to 11 Microfinance Institutions, the sector looks extremely promising in terms of attracting fresh investments from PE funds (Business Line, 2015). The fact that almost all the new entities that have secured licenses have an extremely healthy financial position as measured by highly efficient NPA levels and robust CARs (capital adequacy ratio) augurs well for PE funds.

Lastly, the Manufacturing sector in India is expected to witness exciting times ahead with the fructification of policies pertaining to “Make in India” initiative. With the central government opening FDI in several strategic sectors across the Manufacturing landscape, PE funds in India are literally staring at a vast untapped potential offering humungous opportunities to derive highly attractive rates of return from their strategic investments.

¹ For instance, Vasan Healthcare Pvt. Ltd. in 2012 received a PE infusion of S\$100 million from Government of Singapore Investment Corp. Pte. Ltd (GIC) (Livemint, 2012).

² ARPU – Average Revenue Per Unit.

Table 1
Top Sectors for PE Investment over 2005–2014

Rank	Sector	Number of deals	Value in \$US billion
			13.0
I	IT & ITES	905	13.0
II	Energy & Natural Resources	175	9.1
IV	Real Estate	225	8.6
III	Telecom	55	7.1
V	Banking & Financial Services	311	6.4
VI	Manufacturing	231	4.5
VII	Pharma & Healthcare	298	4.4
VIII	Retail & Consumer	263	4.1

Note. Source: Dealtracker Report 2014, Grant Thornton.

PE Exit Routes

The investment horizon by PE funds in investee corporations typically does not exceed 10 years. By this time, the PE fund is expected to have initiated significant improvements in the operations of the investee firm. Improvements could typically encompass both operational and financial aspects of the firm. At the end of the investment horizon, the PE fund would have ideally achieved an enhancement in the corporate value offering an attractive exit proposition. Theoretically, while several forms of exit are possible, most of the exit routes broadly conform to the three popular routes presented here.

1. **IPOs (Initial Public Offering)** – This remains one of the most popular and frequently adopted exit routes by the PE funds. Here, the PE fund would take the investee corporation public by meeting all the legal and regulatory frameworks in vogue. The strategic stake held by the PE fund usually along with the promoter stake is offered for sale to the public shareholders. The process is implemented in the form of a typical book-building process facilitated by merchant bankers. Like any other IPO, valuation as reflected in the offer-price holds the real key towards making the public issue successful among the investing community. The offer price seeks to compensate the PE investor profitably by generating an attractive rate of return measured as the Internal Rate of Return (IRR).
2. **Acquisitions** – This is also a popular mode of exit adopted by PE funds. Here, the strategic stake held in the investee firm is sold out to a potential bidder (usually specialized investor, corporation or institutional investor) at a negotiated price. Here again, the PE investor envisages to earn an attractive IRR on the investment committed in the target enterprise.

3. **Management Buyout** – This exit route has also been gaining considerable popularity among the PE funds in recent times. This route is also particularly suited for family-run enterprises. In the wake of intense competition posed by their professional peers, family-run businesses seek PE investments both with an objective to hasten the capital expenditure process as also to entrust the management of enterprise with a professional team in order to realize operational and financial efficiencies. Once the PE succeeds in realizing these objectives, the family-run management seeks to repurchase the stake held by the PE in return for a negotiated price that seeks to compensate the PE investors by offering them an attractive IRR on their investment.
4. **Liquidation Preference and Secondary Offerings** – PE firms may also have an arrangement, wherein the investors are in a position to retrieve their initial investments primarily in such scenarios where the investee company is sold below the investible amount. In such circumstances, the most senior investors get preferential liquidation rights. Also, another route that PE funds could contemplate relates to secondary offering of the shares in the investee company, should the investee company be already listed in a stock exchange.

Table 2 below reflects significant exits made by PE funds in India in 2014.

Table 2
Significant PE Exits in 2014

Investor Exited	Investee	Sector
IDFC Alternatives	Galaxy Mercantiles Limited & Blueridge SEZ	Real Estate
Essar Global Fund Limited	Aegis Limited USA Inc - Aegis Group	IT & ITES
Chrys Capital	HCL Technologies	IT & ITES
Bain Capital Partners	Hero MotoCorp Ltd	Automotive
Temasek	Medreich Ltd	Pharma, Healthcare & Biotech
The Carlyle Group	Tirumala Milk Products Private Limited	Retail & Consumer
Providence	Idea Cellular	
SAIF Partners	Just Dial Pvt Ltd	
The Carlyle Group	Cyberoam Technologies	IT & ITES

Note. Source: Dealtracker Report 2014, Grant Thornton.

Literature Review

In this section, we seek to present a concise review of some of the most significant literature in vogue in respect of PE industry. The objective of this section is to mainly educate and enlighten the readers about some of the most influential writings on PE. Berger and Udell (1998) in their thought-provoking paper contend that small businesses often require varying degrees of capital at different stages of their development. It is in this context that PE firms come handy by picking up strategic stakes as a result of equity infusion and then seek to make a profitable exit after staying invested and working with management over a restricted number of years. The paper, unfortunately, does not offer any evidence in respect of working models adopted by PE firms. Kaplan and Schoar (2005) in their influential contribution opine that PE firms generate returns similar to S&P 500 even though performance differed owing to heterogeneity of PE funds. The study also points out that established PE funds tended to outperform their relatively newer counterparts. As this study mainly focused on PE funds' performance assessment, there wasn't much scope left to discuss the 'modus operandi' involving PE funds. In a somewhat departure from earlier findings, Phalippou and Gottschalg (2008) find that after making adjustments for fee and risk, PE funds underperformed S&P 500 by as much as 6%. The authors contend that a major reason for a flawed observance of similar performance between markets and PE funds arises out of the influence rendered by inflated accounting leading to biased investment measures. Kaplan and Per (2009) in their paper argue that it is also typical of PE firms to raise leverage along with equity in order to make investment in target firms. In such a scenario, PE firms typically operate as LBO (leveraged-buyouts) with the prevailing interest rate scenario and market conditions playing particularly a significant role in influencing decisions of PE firms. As an evidence, the study points out that PE firm activity peaked during boom periods ranging from 2005-2007 while declining subsequently in the aftermath of global financial crisis. King and Jill (2002) similarly observe that returns generated on investments in privately held enterprises do not outperform their public counterparts, while raising the spectre of motivation behind such investments even in the face of large risk premiums and poor risk-return trade-offs.

It is worthwhile to infer from the above significant studies that PE firms have been a cynosure in the eye of gleaming researchers with a great degree of focus laid towards the assessment of their performance vis-à-vis representative markets like S&P 500. While most of these studies do seek to address important gaps arising in the literature surrounding PE firms, however, it becomes apparent that the entire subject surrounding valuation dynamics continues to be given a short shrift. The present study seeks to close this gap by resorting to the presentation of two of the most plausible models likely to be adopted by PE firms.

Valuation Conundrums

Valuation of target enterprises plays a very significant role in determining the suitability of investment in target enterprises by PE funds. It is noteworthy to mention here that the typical valuation process surrounding the target firms is somewhat different from the valuation techniques applied in a typical investment setting guided by the all-encompassing fundamental analysis.

PE funds are primarily driven by their desire to earn superior rates of return on their investment, which is usually represented as IRR. Investments are considered worthwhile and feasible so long as the PE funds are able to derive IRR, which is greater than the cost of capital. For discussion purposes, we shall represent IRR and cost of capital as Target IRR and CAPM IRR, respectively. Before dwelling into the pros and cons surrounding the above approach, it will be useful to carefully understand the above technique by considering an illustrative example, as represented below.

ABC PE fund is considering investment in PQR target firm, which is operating in the health-care services sector. For our purposes, let us say that the PE fund is considering picking up 100% stake in the target firm over an investment horizon of five years. The cash-out would therefore take place at the end of the five years. Subsequent to the projections of the income statement for PQR, the following three scenarios emerge (Table 3), depicting the forecasted net income at the end of the five years³.

Table 3
Terminal Equity Values for PQR under Different Scenarios

Parameters	Pessimistic	Most Likely 9	Optimistic
Projected Net Income at end of year 5	8	9	10
P/E Multiple	16.8747	16.8747	16.8747
Terminal equity value (P/E x Net Income)	134.997		16.8747

Note. Source: Hypothesized data.

Given that the initial book value of PQR at the beginning of the investment period (year 0) is 10, it is possible to compute the IRR earned by the PE fund – ABC.

IRR will be computed as shown in Eq. (1) below:

$$\text{Book value at start} = \left[\frac{\text{Terminal value at end}}{(1 + \text{IRR})^{\text{investment horizon}}} \right] \quad (\text{Baldwin, 2001}) \quad (1)$$

³ In keeping up with the objective of the illustration to drive the concept of valuation process as applied to a PE fund, the need to depict the detailed break-up of the projected income statement is obviated. Readers requiring further elaboration on the same are encouraged to contact the author over email.

Here, the book value at start is 10, while the investment horizon is five years. Terminal values are as reflected in Table 3, depicting different scenarios. Resolution of the above equation (IRR being the unknown variable) leads to the following values of IRR, in each of the scenarios (Table 4).

Table 4
Estimated Values of IRR Under Different Scenarios

IRR Values	Pessimistic	Most Likely	Optimistic
	68.293%	72.304%	75.973%

Note. Source: Computed data.

It is obvious from the above that the PE fund would be most desirous to obtain 75.973% return reflected in the Optimistic scenario. However, overlooking the extremes of pessimistic and optimistic scenarios, it is reasonable to believe that the PE fund would encounter the Most Likely scenario at IRR of 72.304%. Readers will observe that even in the Most Likely scenario, an IRR at 72.304% looks excruciatingly high, which is almost reflective of an utopian scenario with virtually negligible bargaining power in the hands of the target firm. Reality would dictate otherwise.

A well acknowledged fact within the investment field of PE and M&A (mergers and acquisitions) is that the target firm has the discretion of accepting or rejecting the deal proposed by the acquirer. In the wake of fierce competition, shareholders of the target firm end up as the ultimate beneficiaries as competing PE funds in their inexorable need to pick up a stake in the target firm end up sweetening the offer often to the detriment of the shareholders of the investing firm. It is thus logical to presume that the most significant motivation behind the shareholders' willingness to sell their stake in the target entity is most predominantly influenced by the degree of the premium offered.

From the above discussion, it becomes clear than unless the PE fund is willing to taper its expectation on generating the desired IRR, it becomes impossible for the shareholders of the target firm to exit at a premium⁴. It is for this reason that PE funds abandon the 'theoretical' IRR in favour of a more realistic target IRR. Target IRR may be defined as the most competitive rate of return that must be earned by the PE fund in order to justify investment in the target enterprise. Empirical research provides that the typical target IRR earned by PE funds range from 25% to 40%.

⁴ This also stems from the simple logic of time value of money, which dictates an inverse relationship between the discount rate and present value (PV), implying that the higher the discount rate, the lower the PV will be and vice-versa.

As we can observe from Table 5, the leverage ratios depict variation over the investment horizon of the PE fund, cost of equity (Ke), therefore, it needs to be estimated for all the projected years. Since Ke values are changing, we also need to compute $(1+Ke)$ in order to discount the terminal value from year 5 through year 0. This approach within valuation is also more popularly known as the "backward approach".

An important part of the discourse at this stage pertains to deriving a benchmark rate of return against which the target IRR could be compared in order to make investment in the target enterprise an economically sustainable proposition. This benchmark would lend the role of a cost of capital. Like any other capital project proposal, a comparison of the cost of capital in place may be facilitated with the project's IRR in order to determine the feasibility of the project. From a PE perspective, the benchmark rate is more appropriately known as the Marketing IRR or CAPM IRR. Given the very wide practical application of the CAPM model, this rate derives its formulation from the underlying logic as enunciated in the original model. The CAPM model is expressed as shown below.

$$[K_e = R_f + (R_m - R_f)(\beta_i)] \quad (\text{Sharpe, 1970}) \quad (2)$$

Continuing with our above example, let us also incorporate the element of leverage into the investee firm – PQR. Typically, it is observed that at the beginning of the investment phase, investee firm tends to depict higher degree of leverage represented by higher (Debt/Equity) ratios. However, with the gradual progress of time, PE fund seeks to turnaround the business by gradually embedding operational and financial efficiencies. The management of PE fund works closely with the existing management of the investee firm in order to implement structural changes within the firm. In our illustration, let us say the investee PQR reflected the following pattern of leverage over the 5-year investment horizon.

Table 5

Estimated Pattern of Leverage for PQR Over a 5-Year Investment Horizon

	0	1	2	3	4	5
Debt %	0.9000	0.8041	0.7006	0.5895	0.4707	0.3442
Equity %	0.1000	0.1959	0.2993	0.4105	0.5293	0.6558

Note. Source: Hypothesized data.

Table 6 below provides the estimated values of $(1+K_e)$ over the investment horizon from year 0 through 5.

Table 6

Estimated Values of $(1+K_e)$ over the PE Fund Investment Horizon

Parameters	0	1	2	3	4	5
Beta-unlevered ^a	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Beta-levered ^b	3.8740	2.6385	2.0053	1.6225	1.3674	
K_e ^c	0.2537	0.1919	0.1603	0.1411	0.1284	
$(1+K_e)$	1.2537	1.1919	1.1603	1.1411	1.1284	
Equity value ^c	68.0290	85.2870	101.6560	117.9480	134.5940	151.8720

Note. Source: Computed data.

^aHere, we assume a risk-free rate of 6% and risk-premium of 5% throughout the investment horizon.

Notes:

- a) Unlevered beta, also known as the asset beta, represents the risk scenario impacting a security without considering the influence of financial leverage. Here, we have presumed a stable unlevered beta of 1, which remains constant across the investment horizon. Keeping this value constant enables us to critically study the impact of variations of leverage on the overall equity risk of the firm.
- b) Levered beta is computed using the following mathematical notation.

$$\text{Levered beta } (\beta_l) = \beta_u \times \left[1 + (1 - t) \times \frac{D}{E} \right] \quad (\text{Hamada, 1972}) \quad (3)$$

where:

β_l = Levered beta,

β_u = Unlevered beta,

t = Tax rate,

D/E = Leverage.

- c) The Equity value has been computed using the backward approach as described earlier.

Year 5 = 151.872 (terminal value),

$$\text{Year 4} = \left[\frac{151.872}{(1.1284)} \right] = 134.594,$$

$$\text{Year 3} = \left[\frac{151.872}{(1.1284)(1.1411)} \right] = 117.948,$$

$$\text{Year 2} = \left[\frac{151.872}{(1.1284)(1.1411)(1.1603)} \right] = 101.656,$$

$$\text{Year 1} = \left[\frac{151.872}{(1.1284)(1.1411)(1.1603)(1.1919)} \right] = 85.287,$$

$$\text{Year 0} = \left[\frac{151.872}{(1.1284)(1.1411)(1.1603)(1.1919)(1.2537)} \right] = 68.029.$$

With all the given values of K_e and $(1+K_e)$, it is possible for us to estimate the CAPM IRR, which is simply computed as the geometric mean of all the K_e values estimated across the investment horizon of the PE fund. That is:

$$\text{CAPM IRR} = \left[(1+K_{e_1})(1+K_{e_2})(1+K_{e_3})(1+K_{e_4})(1+K_{e_5}) \right]^{\frac{1}{5}} - 1 \quad (\text{Baldwin, 2001}) \quad (4)$$

$$= 17.42\%$$

Interestingly, we can observe that with a CAPM IRR of 17.2%, the PE fund would be offering a price of 68.029 to the target firm commanding a book value of 10. While the offer might be very enticing to the shareholders of the target firm, management of the PE fund may deem it as exorbitant and unviable. Ultimately, the shareholders of the target firm would demand a significant premium over and above the book value to consent for stake sale. As we already noted, the PE fund need not really go by the extreme alternatives represented by the Implied IRR at 72.304% or the CAPM IRR at 17.42%. At a target IRR of 40%, the PE fund is in a comfortable position to offer premium to the target firm by offering a price of 28.238 (computed from Eq. 1).

The investment in the target firm would be deemed feasible as the PE fund is able to achieve a target IRR of 40%, which is greater than the CAPM IRR of 17.42%. Should the negotiation between the PE fund and target firm get into a deadlock over disagreement on the offer price, the PE fund would well serve to keep the CAPM IRR as the benchmark. That is, the PE fund must necessarily ensure that the target IRR is always at the least marginally greater than the CAPM IRR. If the PE fund were to accept the CAPM IRR, given the excessive premium offered, the risk arising out of erosion of value in the target firm in the light of an uncertain economic environment remains extremely high. PE fund would have to therefore calibrate a right strategy aimed at maximizing the value of investment on one hand and offering a price to the target on the other that is capable of ensuring a very fast transition of the PE led management into the target firm.

Challenges Surrounding the PE Valuation

It becomes clear from the above example that the valuation dynamics surrounding the PE industry is significantly different from the valuation applied in the context of securities as relevant to a typical fundamental analyst. One of the important challenges surrounding the PE firm pertain to the determination of the most desired rate of return as measured by IRR. Illustratively, while the task may look simpler, in reality, however, estimating the true rate of return becomes quite challenging. The usual IRR range applied to the PE industry, which varies from 20% to 40%, may not after all be fully representative of the unique complexities applicable for certain

kinds of industries. PE funds would naturally demand higher return for investments bearing higher risk. It is perhaps for this reason, at least in the Indian context, that we witness an overcrowding of interest in investments in businesses pertaining to IT and related industries.

The stability of the cash flows reflected in defensive industries like Health care and Education should also explain the sustained interest among PE funds to invest in these businesses. In recent times, with the explosion of e-commerce firms in India, PE funds of late have come under increasing pressure to devise strategies aimed at embracing a feasible exit route. Highly depressed bottom-lines coupled with complex regulatory and operational environment presents PE funds with enormous challenges to arrive a realistic valuation for E-Commerce firms.

Conclusions

This paper has sought to make a seminal contribution to the field of PE by dwelling upon the existing literature and identifying the gaps surrounding poor treatment of valuation models popularly adopted by PE firms. This has been overcome by laying out both conceptual and practical nuances surrounding two of the most popular models adopted by PE firms. As a result, it becomes much easier for discerning readers to appreciate the financial rationale surrounding some of these models. Apart from the treatment of valuation models, the paper also goes on to identify some of the most significant trends within the PE industry with specific reference to emerging market economies like India.

This paper has been primarily devoted towards expanding the underlying conceptual bases surrounding PE firms in general, which has been achieved by sound theoretical underpinnings. The ideas offered in the paper could be further expanded by possibly tracing the strategic imperatives on valuation governing the PE firms in general. This could be achieved by resorting to a qualitative study aimed at retrieving responses from key executives of a representative set of PE firms. Such a study would further enhance and enrich the scope of discussion surrounding the operation of PE firms both in academia and in the practitioners' community. As the present paper is restricted to offering an exhaustive theoretical background on PE firms, it is envisaged that the limitations surrounding analyses of practical considerations will be overcome in future studies.

Private Equity, notwithstanding the challenges, will continue to play a leading role in heralding the growth of the industries particularly representing the sunrise sector that offer enormous opportunities for scaling the business going forward. In emerging market economies like India and China, PE funds would continue to evince heightened interest in promising ventures (both young and middle-aged) representing diverse sectors so long as opportunities remain towards ensuring a profitable exit route. As

PE funds particularly evince interest in investing in private ventures, existence of a robust and an expanding capital market becomes a necessary condition.

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The authors would like to thank the special issue editor and the reviewers for helpful comments on the previous draft of this paper.

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A Comparative Study of Competencies of Doctors Working in Private & Public Hospitals – An Indian Perspective

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Received January 2017; Revised May 2017; Accepted June 2017

Abstract

The healthcare industry is a specific representative of the service industry that regards quality as a fundamental value of medical care. To manage quality within the healthcare setting is a challenging task due to its complexity. Further, when it comes to managing the ever-growing number of patients with limited number of health care professionals, a question mark is placed on the quality of the service provided. The role of doctors is pivotal in providing quality healthcare services to the patients. When an individual visits a doctor with some symptoms, it marks the beginning of a relationship of trust and confidence. A doctor not only treats the symptoms, but also tries to empathize with the patients. The process of treatment is marked by various meetings which are of two-way clear communication and effective interpersonal skills. The way the doctor communicates with the patient also plays a pivotal role in the healing process. Unfortunately, there has been a rise in the cases of physical attacks on the doctors by the patients and their relatives. The major area of concern is the lack of appropriate communication between the patients, relatives, and the doctors. We have taken up this study to understand the role of doctors and compare the competencies of doctors working in private and public hospitals. Further, we have also determined the relationship between the competency of doctors and the quality of service along with patient satisfaction. We used the survey method for collecting data from doctors, patients, and their relatives. The gap identified from the literature review suggests that comparative studies of competencies of health care professionals working with private and public hospitals were rarely done. Also, the Fundamental Interpersonal Relations Orientation (FIRO B) as a tool to gauge the interpersonal relations orientation of doctors in the context of research is tried for first time. The findings of the study can act as guidelines for government doctors and their private counterparts in understanding the skills necessary for effective doctor-patient relationship. The government-run hospitals will be able to work on areas of concern suggested by the researchers for delivering service quality to its patients.

Private hospitals, too, will be able to redesign their policies and practices to ensure the quality of services to their patients.

Keywords: Competency, doctors, private hospitals, government hospitals, service quality.

Reference to this paper should be made as follows: Metre, S. G. and Chavan, M. M. (2017). A Comparative Study of Competencies of Doctors Working in Private & Public Hospitals – An Indian Perspective. *Public Enterprise* 23(1), 16-30. <https://doi.org/10.21571/pehyj.2017.2301.02>

Introduction

Competence is a generic term referring to a person's overall capacity, while competency refers to specific capabilities, such as leadership (Chase, 2010). Having a competent workforce is the key to success of any organization. One can say that, almost everything can be replaced or repaired, but life cannot be. Health care is one such area where people's lives are at stake and, hence, the 'stakes' are high.

The health care deals with different services, such as hospital services, diagnosis services, physician consultancies, and some other emerging fields. What is important to understand is that the role of a doctor/physician is undeniably the most important one. Hence, in the present study, the focus is on the doctors/physicians who are the major component of the health care service. Competence or competency mapping framework ensures that doctors manage to keep themselves abreast of the latest technologies and satisfy the patients.

This paper attempts to differentiate between commonly interchanged but three very important and different terms: knowledge, skills, and competencies. The following Table 1 differentiates among these three terms.

Table 1
Difference between Knowledge, Skill, and Competency

Knowledge	Skill	Competency
Knowledge is awareness, information, or understanding about facts, rules, principles, guidelines, concepts, theories, or processes needed to successfully perform a task.	A skill is a capacity to perform mental or physical tasks with a specified outcome	A competency may be comprised of knowledge, a single skill or ability, a personal characteristic, or a cluster of two or more of these attributes.

A doctor can acquire knowledge by means of education, i.e., they can learn about the details of the profession by acquiring degrees, such as MBBS, MD, MS, DGO, BAMS, BHMS, etc. A doctor can hone their skills through practice until they become an inherent quality. But being competent means having the knowledge and the skill, plus any personal characteristic, such as interpersonal skills, patience, intuition, and listening skills.

In this light, the paper is interested in understanding the factors or attributes that affect the competency of a doctor. Specifically, the paper focuses on competencies of doctors working in private and government hospitals. To do this the paper employs the survey method, along with the Fundamental Interpersonal Relations Orientation (FIRO B) analysis.

The next section provides a brief background of the tools used, FIRO B and various competency models used in various countries with an overview of the related literature, which forms the basis for developing empirically tested hypotheses.

Background and Literature Review

Quality refers to the closeness of an actual outcome to the expected outcome by the observer (Kalepu, 2014). This observer has become the Customer, who has gained total control over the supplier of the service or product. Therefore, the onus is now on the service provider who must try to satisfy the customer by giving him/her the best possible outcome. Health care is one tricky sector, where it is highly challenging to take care of each and every aspect as the end user's very life is at stake. Health care service providers – private or government-owned – want now to provide quality services to the patients, as they now realize the importance of service quality as a measure to improve their competitive position. People no longer choose a hospital just because their physician advised them to do so or because it is located nearby. There are a variety of factors which now contribute to the selection criteria of a hospital. Improvements in global health can only be realized through the development of a workforce that has been educated to promote health and to care for those with disease. Increased attention is being placed on competency-based education as a means for optimizing the preparation of health professionals.

The customers' expectations are derived from their perception of their previous experiences in the use of services. According to Grönroos (2001), service quality is the difference between customer expectations and perceptions as the service is being received by the customer (Parasuraman et al., 1988; Irfan & Ijaz, 2011). Thus, it is necessary for healthcare providers to monitor how well the customers' expectations have been met after delivering the services (Zarei, Arab, Froushani, Rashidian, & Tabatabaei, 2012).

The General Assembly of the International Association of Medical Regulatory Authorities (IAMRA) meeting in Melbourne, Australia, passed a resolution encouraging regulators to introduce systems that will make sure doctors can show they are competent and up to date from the day they qualify to the day they retire. (“Doctors face competency checks throughout the world”, 2016). The Accreditation Council for Graduate Medical Education (AGME) expects residents to obtain competency in the six areas to the level expected of a new practitioner Patient Care, medical knowledge, interpersonal and communication skills, Professionalism, Practice-Based Learning and Improvement and Systems-Based Practice (Kavic, 2002).

In providing responsive and quality health care delivery, the importance of understanding patients’ satisfaction is widely acknowledged. According to Woodside, Frey, and Daly (1989), cited in Peprah (2014), consumer satisfaction is a fundamental requirement for healthcare providers. Many studies add that in addition to its positive implications on patient retention and loyalty, patient satisfaction influences the rate of patient compliance with physician advice and the healing process of patients (Calnan, 1988; Roter, Hall, & Katz, 1987). A competency model for general practice, comprising implications for selection, training, and development (Patterson, Ferguson, Lane, Farrell, Martlew, & Wells, 2000), suggests that effective communication is crucial to the medical job role, in general, and for general practice, in particular.

There are a number of critical issues relating to healthcare services that highlight the need to assess and measure patients’ satisfactions and improve them. Much has been said about service quality and its importance in today’s world where consumers question each and every aspect of service delivered to them. Healthcare is one such industry where quality is a fundamental value to medical care. To manage quality in India, where we follow a three-tiered delivery system to lakhs of patients who belong to various strata of society becomes quite challenging. With rise in number of private players providing healthcare facilities to the common man, it becomes imperative to understand the service quality provided to the patients and their relatives. Most of the literature on service quality in health care examines the perception using the SERVQUAL model.

Peprah and Atarah (2014) conducted a study on assessing the patients’ satisfaction using SERVQUAL in a hospital in Ghana and suggested that four out of the six SERVQUAL model dimensions, namely reliability, communication /interpersonal relationship, assurance, and responsiveness, were to be taken care of as the patients showed their dissatisfaction. Yousapronpaiboon and Johnson (2013) studied the service quality between private and public hospitals in Thailand and found that the poor service quality delivered to patients by public hospitals as compared to the private hospitals is due to five dimensions of service quality: responsiveness, reliability, empathy, tangibility, and assurance, respectively. The foregoing discussion leaves us with a broad idea about the variables highlighted in the literature as determinants

of service quality. However, we go beyond the related literature and complement it with the realities of the corporate and non-corporate hospitals and the various policy initiatives that the government of India has taken in order to provide quality health care services.

Maharashtra is the name of the third-biggest state of India. Mumbai (Bombay) is the capital of Maharashtra. Vidarbha is the eastern region of Maharashtra state, which is made up of the Nagpur Division and the Amravati

Division. It occupies 31.6% of the total area and holds 21.3% of the total population of Maharashtra. The largest city in Vidarbha is Nagpur. Nagpur, the second capital of Maharashtra, boasts of three medical colleges and hospitals, plus nursing institutes and is becoming a medical hub with a rise in the number of hospitals like Alexis, Wockhardt, and AIIMS. With the scenario looking so opportunistic, there is a scope for development. We intend to study the competencies of doctors working in public and private hospitals in the Vidarbha region. In the next section, we discuss the methodology employed and the data sources for the variables used in the paper.

Methodology

Research Setting

The following model (Figure 1) and tools were adopted for the current research. The model considers that a “better competence of the health care professional” leads to a “better service quality”, which in turn leads to “better reputation & success” of the hospitals.

Figure 1. Conceptual model for research.

Variables and Measurement

Competency mapping is used to match the capabilities and talent of personnel with specific job tasks and organizational needs. Common competency mapping approaches include assessment center, critical incidents technique, interviewing, questionnaires, and psychometric tests. We designed a Competency mapping ques-

tionnaire which had the independent and control variables divided into five basic categories.

First, Basic Knowledge and Information that a doctor must possess in order to treat the patients; this category includes five sub-factors, namely *Command of basic facts*, *Relevant professional knowledge*, *Diagnostic testing*, *Documentation*, and *Safety & infection control*.

Second, Skills and Attributes of a doctor, which have a significant impact on the doctor-patient relationship. These are further subdivided into five sets, namely *Continuing sensitivity to events*, *Analytical, problem solving and decision-making skill*, *Social skills and abilities*, *Emotional resilience*, and *Pro-activity*.

Third, Communication and Interpersonal skills, which are the most important part of the health care delivery system in India, as the people here belong to different religions, communities, cultures, and speak different languages. This category includes *Listening skills*, *Precision in communication*, *Sensitivity*, *Team spirit*, *Flexibility*, and *being Receptive to corrections*.

Fourth, Personal Qualities, which include *High energy level*, *Detail consciousness*, *Honesty*, and *Adherence to code of conduct*.

Fifth, and the last determinant, is Meta Qualities, which comprise *Creativity*, *Mental agility*, *Balanced learning habits*, and *Skills and self-knowledge*.

Along with the above, the paper also used FIRO B as a tool for better understanding of one's self in a number of important areas, including how to handle interpersonal relationships, and one's own social needs, how others perceive you, and how you see them. The theory is based on the belief that when people get together in a group, there are three main interpersonal needs they are looking to obtain – affection/openness, control, and inclusion. Schutz (1958) developed a measuring instrument that contains six scales of nine-item questions that he called FIRO-B. These categories measure how much interaction a person wants in the areas of socializing, leadership and responsibilities, and more intimate personal relations. Element-B (former known as 'FIRO-B') was created, based on this theory, a measurement instrument with scales that assess the behavioral aspects of the three dimensions. Scores are graded from 0–9 in scales of expressed and wanted behavior, which define how much a person expresses to others, and how much he wants from others. A doctor's interpersonal skills have a major impact on his relationships with his patients and this in turn can affect the patient satisfaction as well. Competencies are captured by administering a structured questionnaire and by performing a FIRO B analysis of a sample of health care professionals.

Service quality is captured by administering the *SERVQUAL questionnaire* on patients and their relatives. Five parameters were measured using 25 sub-questions, thus allowing the maximum SERVQUAL score of 175.

In-depth structured interviews of senior doctors were conducted to understand the skills that distinguish a successful doctor from an unsuccessful one. The focus of the

interviews was to understand the course content and the pedagogy used to impart these skills and beliefs they have about treating the patients.

The reputation and success of the hospital is captured using observation and *other supporting data*, such as information about the infrastructure, the consultation fees, percentage of patients admitted, and availability of experienced professionals. Each of these are measured on a three-point scale, thus making the highest possible score of 12.

Research Hypotheses

When it comes to the diagnosis of a case, a doctor must be able to give due consideration to many factors and one of them is taking opinions or accepting suggestions from seniors or colleagues. If doctors are too adamant in not accepting the view of others, it may lead to a wrong diagnosis and ultimately it will affect the quality of the service being provided. And it will surely affect the patients. The FIRO B analysis allows us to check the expressed and wanted control parameters of the doctors. In this regard, the following hypothesis is put forward:

- ***Ho1:*** There is no significant difference between the expressed control parameter and the wanted control parameter for doctors.

The SERVQUAL score captures the patient satisfaction and there should not be any difference in the level of satisfaction between the patients visiting the public and private hospitals and therefore the second hypothesis is:

- ***Ho2:*** The average SERVQUAL scores of doctors from state-owned hospitals equals the average SERVQUAL scores of doctors from private hospitals.

The success and reputation of a public and private hospital should be independent of ownership. Therefore, the third hypothesis is:

- ***Ho3:*** The average success and reputation score (SRS) of the doctors from state-owned hospitals equals the average SRS of doctors from private hospitals.

The patient satisfaction and reputation of a hospital should be interrelated. Therefore, the fourth hypothesis is:

- ***Ho4:*** There is no significant relationship between the SERVQUAL score and the success and reputation score (SRS) of state-owned hospitals and private hospitals.

Data Selection and Sources

A total of 102 hospitals from Vidarbha region are considered as the universe of the proposed study. These were the hospitals having a minimum 100 beds and were spread across 11 districts of the Vidarbha region. The sampling framework is described below, in Figure 2.

Note. @ Observation; * Competency mapping questionnaire; # FIRO B; \$ SERV-QUAL questionnaire.

Figure 2. Sampling frame.

Hypothesis Testing and Analysis

Levene's Test for Equality of Variances (Table 2) lets us conclude that there are equal variances assumed and the independent sample t-test for Equality of Means suggest us that:

A} In the case of state-owned hospitals, there is no significant difference be-

tween the expressed control parameter and the wanted control parameter for doctors. Here, the doctors were ready to take opinions of others and accept the offered suggestions.

- B} In the case of private hospitals, there is a significant difference between the expressed control parameter and the wanted control parameter for doctors. Here, the doctors do not want others to control their behavior. This can create problems for doctors if they are working in teams, which they generally have to do in big multispecialty hospitals.

The Levene's Test for Equality of Variances makes us assume unequal variances and a p-value of 0.244 (Table 2) lets us accept the null hypothesis and conclude that the average scores of doctors from state-owned hospitals are equal to the average scores of doctors from private hospitals.

Table 2
Statistics – Testing Ho1 and Ho2

Group Statistics										
	Type	N				Mean	Std. Deviation	Std. Error Mean		
Servqual	3	60				54.130	10.270	1.326		
	2	244				55.930	12.171	0.779		
Independent Samples Test										
		Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Servqual	Equal variances assumed	4.087	0.044	-1.057	302	0.291	-1.801	1.704	-5.154	1.552
	Equal variances not assumed			-1.171	103.7	0.244	-1.801	1.538	-4.851	1.249

Furthermore, the Levene's Test for Equality of Variances makes us assume equal variances and a p-value of 0.000 (Table 3) lets us reject the hypothesis that the average success and reputation score (SRS) of doctors from state-owned hospitals equals the average SRS of doctors from private hospitals.

Table 3
Statistics – Testing Ho3

Group Statistics										
		Type	N	Mean		Std. Deviation		Std. Error Mean		
Servqual		3	60	5.950		1.346		0.174		
		2	244	8.800		1.588		0.102		
Independent Samples Test										
		Levene's Test for Equality of Variances				t-test for Equality of Means				
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Servqual	Equal variances assumed	0.083	0.774	-12.820	302	0.000	-2.853	0.222	-3.291	-2.416
	Equal variances not assumed			-14.170	103.3	0.000	-2.853	0.201	-3.252	-2.454

The Kendall's tau_b Correlation Coefficient (0.010) is low and significant, and Spearman's rho (0.014) is also low and significant (Table 4). Thus, we find that the results are contrasting with the assumption that the patient satisfaction should have a direct relation with the reputation of the hospital. Here, we accept the null hypothesis and conclude that there is no relationship between the SERVQUAL score and SRS.

Table 4
Statistics – Testing Ho4

Correlations				
		SRS	Servqual	
Kendall's tau_b	SRS	Correlation Coefficient	1.000	0.100
		Sig. (2-tailed)	.	0.815
		N	304	304
	Servqual	Correlation Coefficient	0.010	1.000
		Sig. (2-tailed)	0.8	.
		N	304	304
Spearman's rho	SRS	Correlation Coefficient	1.000	0.014
		Sig. (2-tailed)	.	0.807
		N	304	304
	Servqual	Correlation Coefficient	0.014	1.000
		Sig. (2-tailed)	0.807	.
		N	304	304

Analysis of the In-Depth Structured Interviews

In-depth structured interviews were designed for doctors, consisting of 17 questions which were intended to elicit responses in areas such as communication skills, interpersonal skills, the routine of doctors, relationships with colleagues and supervisors, personality traits, factors that motivate doctors, new learnings and aspects most or least liked by the patients. These skills are those skills which are not entirely taught in the curriculum practiced by the medical schools. This paper aims to bring out those skills that are found in a successful doctor.

For example, a senior doctor with 30 years of experience said that “it’s of crucial importance to ease the patient. It is then you can establish a way to communicate and understand the problem. Unfortunately, the curriculum and pedagogy do not focus on this aspect.”

Another doctor mentioned that “a good doctor is one who can feel the patients’ plight, can explain to the relatives the problem, and how the treatment works. This communication has great impact on building faith and speeding recovery”.

A third doctor said that “in government hospitals, our patience is tested most of the times, as the patients are mostly illiterate. To cope up with them, we need to keep calm and at the same time be very effective in communication.”

A person going to a doctor is already suffering from some problem or another. A rude or cold behavior will surely aggravate his/her problems. In this sense, one of the doctors said that “patients expect us to explain the issue in simple terms. Sometimes due to work pressure, we may give a cold shoulder but then that results in many conflicts. We should be trained to respond rather than react in such a way.”

When asked about the things liked most in a doctor by the patients, the following responses were elicited:

- Interpersonal skills
- Positive attitude
- Communications skills
- Pocket-friendly approach
- Style/looks
- Quick and accurate diagnosis
- Patience
- Soothing and calm nature
- Availability/Approach

to time, hospitals must measure patient satisfaction and keep a tab on the lacunas found. Honing the interpersonal and communication skills of healthcare professionals is the need of the hour and the administrators must arrange for training inputs in this area. Secondly, there are implications for the doctors. A successful doctor is not only one who has the necessary medical qualifications; but rather he/she is one who along with his/her professional knowledge also possesses basic competencies like communication & interpersonal skills. Most of the conflicts between a doctor and a patient happen because of poor communication. The doctors can understand their personal style of interaction and make changes in their way of interaction, to be able to satisfy and treat the patient. Thirdly, there are managerial implications for the Board of Studies members. Along with technical skills, other soft skills should be included in the curriculum for those who are pursuing a medical education.

The present study also has some limitations. In this sense, we were not able to get an equal number of doctors from some of the fields, such as Homoeopathy, Unani, and Ayurveda, among others. The same was the case with a number of public and private hospitals, as the number was more skewed in favor of private hospitals.

The present research, however, does not end with the conclusions provided herewith. The research can be made practice-specific. In health care, the role played by doctors is undoubtedly important, but at the same time, one cannot deny the importance of other health care professionals, such as nurses, technicians, and pharmacists. The study can be further extended to determine the competencies of these professionals.

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The next question was related to the things which were least liked in a doctor by the patients. The following responses were elicited:

- Giving less information to the patient/relatives
- Cold/rude behavior
- Lack of availability
- Lack of professionalism

Thus, apart from professional skills, a successful healthcare professional must develop behavioral and interpersonal skills. Time management skills were also emphasized. The curriculum and pedagogy must focus on communication skills and personality development. Sustained training must be provided for these professionals throughout their careers.

Findings and Conclusion

Voltaire once said that the “art of medicine consists of amusing the patient while nature cures the disease.” What Voltaire said might have been true several years back when man had no access to new technologies or had not discovered some lifesaving drugs. But nowadays, when the complexity of the diseases has increased, the population is growing, and ignorance is still rampant in a country like India, the question is, “does the nature really do the healing?” Perhaps yes or perhaps no. The true answer lies in the healthcare professionals and their competencies. The present study aimed to find out the competencies of doctors working in state-owned and private hospitals. We used various tools and methods of data collection and concluded that the state-owned hospital doctors are more flexible and open to other people’s ideas. Surprisingly, the patients from both setups are satisfied equally, but the SRS scores reveal that in the Indian context, the private hospitals are having better reputation and success. Much of the SRS scores can be attributed to the technology and facilities available at private hospitals in India.

In-depth structured interviews provided the much-needed information regarding the skills of the doctors, their practices, beliefs, and routines. The most prominent skill that came out was communication & interpersonal skills. Contrary to the belief that professional knowledge or basic knowledge will be the most preferred skill by the patients, results show that doctors’ communication & interpersonal skills, such as honesty and intuition, are preferred. Though most of the doctors have a very tough routine, they unanimously opined on the need of other skills necessary for effective medical practice, such diagnosis & treatment. Thus, both professional & behavioral competencies of doctors are very important for the success of a hospital and also for better service quality.

Managerial implications are threefold. Firstly, for hospital administrators, this study provides guidelines for ensuring a better service quality to the patients. From time

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Authors Note

The authors would like to thank the special issue editor; the language editor of the journal; and the anonymous referees for their valuable feedback, which helped us to improve the quality of the paper significantly.

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MIM3: Methodology of Innovation Management for Obtaining the Level 3 of I2MM

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Received December 2016; Revised May 2017; Accepted June 2017

Abstract

The purpose of the present study is to develop a methodological proposal for improving the management of the innovation maturity for obtaining the level 3 of the Integrated Innovation Maturity Model (I2MM), considering an integrated methodological approach which includes the good management practices of the following management areas: (a) strategic management, (b) project management, (c) innovation models and innovation methods, (d) standards for innovation management, (e) knowledge management, and (f) financial management. As a result, MIM3 (the Methodology of Innovation Management for obtaining the level 3 of the I2MM in the organizations) is presented.

Keywords: Innovation management, innovation maturity, methodology, project management, innovation standards, I2MM.

Reference to this paper should be made as follows: Alfaro, E. (2017). MIM3: Methodology of Innovation Management for Obtaining the Level 3 of I2MM. *Public Enterprise* 23 (1), 31-83. <https://doi.org/10.21571/pehyj.2017.2301.03>

Introduction

Innovation processes are commonly treated as creative processes and are centered on the technical aspects of the creation of the products, which are very important for the majority of innovation experts and practitioners; however, those creative processes are neither the unique nor the most important processes for obtaining the expected organizational goals. The most important aspect of the innovation processes must be the value generation in the organizations in which those processes will be developed. Diverse issues related to strategic management, project management, standardization of the innovation processes, knowledge management, and financial management are not considered with the point of view which is focused on the creativity, and there was not found a methodology with integrates the diverse parts for solving the described issues with the consequent delays in the adoption and the implementation of good practices of the innovation management which would improve the accomplishment

of goals of the organizations. All the mentioned points of view were integrated in MIM3, a proposal for Methodology of Innovation Management for obtaining the level 3 of the I2MM, which constitutes the purpose of this study.

The proposed MIM3 methodology integrates the generation of ideas of innovative projects in a manner which is aligned with the strategic planning of the organizations in accordance with the organizational purposes and goals. MIM3 also includes the knowledge areas of the project management according to Project Management Body of Knowledge (PMBOK) of the Project Management Institute (PMI) and the use of the Critical Chain with the processes of innovation models and innovation methods, considering the good practices of the standards of innovation management. Additionally, MIM3 includes the yellow pages of the knowledge management and the evaluation of the value generation of the innovative projects with a procedure based on MEVGIT, which is also based on free cash flow, total cost of ownership, and the direct costing.

Background of the Problem

The issues related to the innovation management in the organizations are very diverse and are commonly treated without a holistic focus, being creativity the main associated focus, leaving aside the need to take into account the focus on the value generation for the organization, which must be the most important focus of the organization. The common issues related to the innovation processes of the organizations are the following:

1. The lack of integration of the innovation processes to the strategic planning of the organizations. The strategic plans don't include the innovation processes joint with the strategic, main or support processes or areas. In respect, Dougherty and Hardy (1996) explained that the two types of problems which are associated with innovation are the following: (a) those affecting a particular project and (b) those affecting the organizational context (p. 1121). Van de Ven (1986) also indicated that "the context of an innovation points to the strategic problem of institutional leadership" (p. 591). Additionally, in a comparison of some European countries (Austria, Bulgaria, Spain, Romania, Portugal, Poland, Czech Republic, Netherlands, Hungary, Slovakia, Sweden, and Greece), Robinson and Stubberud (2011) indicated the following issues:
 - A. No need to innovate due to prior innovation: (a) between 0.84% (Netherlands) and 23.68% (Greece) in small firms (between 10 and 49 workers), (b) between 0.88% (Netherlands) and 19.17% (Greece) in medium firms (between 50 and 249 workers), and (c) between 1.69% (Netherlands) and 37.21% (Greece) in large firms (250 or more). In the cases of Sweden and Slovakia, neither small, nor medium, nor large firms indicated occurrences.

B. No need to innovate because no demand for innovation: (a) between 0.99% (Netherlands) and 30.66% (Greece) in small firms, (b) between 1.20% (Netherlands) and 22.50% (Greece) in medium firms, and (c) between 1.99% (Netherlands) and 28.84% (Greece) in large firms. In the cases of Sweden and Slovakia, neither small, nor medium, nor large firms indicated occurrences.

This lack of integration of the innovation processes into the strategic planning of the organizations affected the innovative projects and the organizations in which the innovative projects were developed; due to that, the projects did not generate value for the organizations in many cases, and the continuous loss of value would affect seriously the organizational processes and the business continuity, depending on the market conditions.

2. The innovation processes obtained good new products (goods or services, or both); however, the solution didn't include the complete business model to which the innovative product would be a part of, and as a consequence, the innovation failed. It is common for the focus to be on the intrinsic product and not on the business model as a whole, and due to that, some parts of the business model fail and the innovative project fails as a consequence. This situation could be presented in the production of goods, the production of services, and the production of goods and services, depending on the type of economic sector.
3. The innovation processes obtained good new products; however, the personnel of the organization don't know which needs of which users will be satisfied or which problems will be solved with the new products, or the costs are very high. In diverse situations, the areas of innovation developed many new ideas of products without a focus on the value generation for none of the stakeholders of the organization, situation which causes more delays and expenses to the diverse processes of the organization. It is common to find that the people of the diverse areas inside the same organization do not agree about how the products generate value for the consumers or the clients and do not agree about the perception of the stakeholders related to the products of the organizations.
4. The project management of the innovative projects has the common type of problems which are presented in the diverse types of projects, related to: integration management, scope management, time management, cost management, quality management, human resources management, communications management, risk management, acquisitions management, and stakeholders management. In respect, to the question about the common problems of the firms with their innovation initiatives, Gooffrey Moore answered in an interview (Davidson & Leavy, 2007) that "the biggest challenge comes from the life cycle of innovation, which calls for different management

focus at different stages” (p. 4). Dougherty and Hardy (1996) also explained that “when project-level problems are solved across multiple innovations and multiple stages simultaneously, sustained innovation can occur” (p. 1121). Additionally, in a comparison of some European countries (Austria, Bulgaria, Spain, Romania, Portugal, Poland, Czech Republic, Netherlands, Hungary, Slovakia, Sweden, and Greece), Robinson and Stubberud (2011) indicated the following issues:

- A. The innovation activity is seriously delayed: (a) between 9.5% (Spain) and 33.42% (Netherlands) in small firms, (b) between 12.81% (Spain) and 39.16% (Sweden) in medium firms, and (c) between 17.73% (Spain) and 51.05% (Sweden) in large firms. In the cases of Austria and Portugal, neither small, nor medium, nor large firms indicated occurrences.
- B. Lack of funds within the enterprise or enterprise group: (a) between 9.24% (Netherlands) and 34.19% (Romania) in small firms, (b) between 6.4% (Netherlands) and 27.27% (Poland) in medium firms, and (c) between 8.03% (Portugal) and 32.09% (Greece) in large firms. In the case of Sweden, neither medium nor large firms indicated occurrences.
- C. Lack of finance from sources outside the enterprise: (a) between 5.43% (Netherlands) and 32.60% (Romania) in small firms, (b) between 3.00% (Netherlands) and 28.49% (Portugal) in medium firms, and (c) between 3.22% (Netherlands) and 28.75% (Portugal) in large firms. In the case of Sweden, neither small, nor medium, nor large firms indicated occurrences.
- D. Innovation costs are too high: (a) between 6.18% (Greece) and 40% (Portugal) in small firms, (b) between 5.88% (Netherlands) and 28.63% (Spain) in medium firms, and (c) between 6.75% (Netherlands) and 26.09% (Romania) in large firms. In the case of Sweden, neither small, nor medium, nor large firms indicated occurrences.
- E. Lack of qualified personnel: (a) between 6.6% (Netherlands) and 24.95% (Greece) in small firms, (b) between 6.93% (Poland) and 27.50% (Greece) in medium firms, and (c) between 4.28% (Poland) and 40.47% (Greece) in large firms. In the case of Sweden, neither small, nor medium, nor large firms indicated occurrences.
- F. Difficulty finding cooperation partners for innovation: (a) between 1.80% (Netherlands) and 16.02% (Greece) in small firms, (b) between 1.99% (Czech Republic) and 28.85% (Greece) in medium firms, and (c) between 0.55% (Hungary) and 38.14% (Greece) in large firms. In the case of Sweden, neither small, nor medium, nor large firms indicated occurrences.

5. For the innovation processes, the creative processes and not the value generations of the organizations are prioritized. Depending of the type of organization (profit or non-for-profit organization), the value generation would be measured by money (firms or profit organizations) or by the expected results of benefits to the target population (non-for-profit organizations). In the value generation, commonly the total costs of ownership (TCO) of the innovative projects are not well calculated, and due to that, the innovative projects resulted in failures. If only after the acquisition of the goods and services, the managers take into account the costs of the support and the maintenance of the results of the innovative project, then it is probably that the reduction of value with that project appears evident.
6. The lack of regulatory framework for norming the innovation processes in the organization. There is not a regulatory framework which norms the following aspects: incentives (monetary or non-monetary), roles, committees, intellectual property rights, participation of the benefits after the new products are developed or put in the market, accounting processes for registering the innovation processes and products, etc. Also, the individual contracts commonly did not include anything about the innovation processes or innovative products that the personnel must realize, without the cases of people who have contracts for innovative or intellectual processes or areas, such as: research and development areas in industries, research areas in universities, etc.
7. The lack of motivation or incentives to the personnel of the organization, for proposing new ideas or innovative projects. Commonly, the ideas, the reports or another intellectual production of the personnel are taken by the bosses or coworkers, and additionally, the propositions of new ideas or innovative projects don't result in awards or recognition for the innovative people. If the people are not recognized or rewarded, and the risk of plagiarism is present, then the people will not be motivated to propose new ideas. With regards to the question related to the single most intractable problem with their innovation initiatives, Gooffrey Moore answered in an interview (Davidson & Leavy, 2007) that "the core of the challenge is the internal competition for execution-oriented leaders. These people are key to keeping the engine of a mature business running, consistently squeezing out incremental growth from an increasingly challenging set of options" (p. 4). It is important to recognize that the investment in technologies for innovation could be only expenses if the people are not motivated to use those technologies for developing innovations.
8. The lack of time and opportunities for the personnel of the organization, for presenting new ideas or innovative projects. The personnel of the organization are commonly fighting the daily labors and don't have time in the regular labor time for the innovative processes or the creation of new ideas or products. In this sense, Van de Ven (1986) explained that "there is the human problem of

managing attention because people and their organization are largely designed to focus on, harvest, and protect existing practices, rather than pay attention to developing new ideas” (p. 591). Many bosses limit the opportunities of the personnel of the organization for presenting new ideas or innovative projects to avoid that their subordinated personnel shine in the eyes of the high-level management or the board of directors, and in the future, will convert them in candidates for the labor positions of the bosses.

9. The lack of training and competencies (knowledge, abilities, and attitudes) for creating and developing new ideas or innovative projects. Some workers of the organization, commonly are not sufficiently trained for creating and developing new ideas or innovative projects, related to the economic sector or the market of the organization; also, the managers or the board of directors don't promote the training of the personnel through the human resources area, due to the fact that they think that the training is not an investment, on the contrary, they think that the training is an unnecessary expense in many cases, and due to that the personnel could leave the organization in the short term.
10. The lack of investment or expenses on infrastructure, equipment and other resources, for prototyping and testing the new ideas. The elaboration of prototypes requires investment or expenses in infrastructure, equipment and other resources (materials, personnel, and investment), which commonly is promised but not budgeted or simply is not budgeted or is not sufficiently assigned. It is important to indicate that in many countries there are private or public competencies (national or international) of innovative projects, with the corresponding awards, financial coverage or financial loans with very low interest rates; however, the workers of many organizations don't know about them and consequently don't participate and don't obtain the funds which are necessary for the development of the innovative projects. In this sense, in a comparison of some European countries (Austria, Bulgaria, Spain, Romania, Portugal, Poland, Czech Republic, Netherlands, Hungary, Slovakia, Sweden, and Greece), Robinson and Stubberud (2011) explained that one of the problems for improving the innovations of the firms, is the lack of information on technology: (a) between 1.95% (Slovakia) and 29.96% (Greece) in small firms, (b) between 1.02% (Slovakia) and 30.83% (Greece) in medium firms, and (c) between 0.83% (Hungary) and 56.74% (Greece) in large firms. In the case of Sweden, neither small, nor medium, nor large firms indicated occurrences.
11. Absence of a collaborative culture which permits the synergies among the workers of the organization for improving the ideas of innovative projects. Each worker wants to shine by herself or himself, and doesn't want to collaborate with coworkers for improving the ideas of innovative projects. In this sense, Choudhury (2013) explained that “although organizations increasingly recognize knowledge as a key source of competitive advantage, one of the challenges of

knowledge management is that of getting people to share their knowledge” (p. 38). Van de Ven (1986) also indicated that “there is the structural problem of managing part-whole relationships, which emerges from the proliferation of ideas, people and transactions as an innovation develops over time” (p. 591). The human resources departments have a very hard challenge for improving the collaborative culture for stimulating the innovation in the organizations.

12. Many workers of the organizations feel that the standardized norms and procedures limit them for introducing new ideas of innovative projects. In this sense, many workers are fearful of realizing actions out of the standardized norms and procedures for avoiding the future and negative reactions of their bosses who commonly act in a negative way in front of the presentation of new ideas, considering them as a waste of time, effort, and money.
13. The innovation processes are developed without the validation of the satisfaction of the needs to the early adopters or consumers with similar characteristics, with the innovative products (goods, services, or both). In many cases, the organizations fail in the innovation processes; due to that their high investment is converted in a waste of money and time – nevertheless, meanwhile the innovation processes have occurred, validations of the satisfaction of needs of the potential consumers were not done and the products must be re-elaborated continuously, with excessive additional costs and steps in comparison with the normal innovation processes. In this sense, in a comparison of some European countries (Austria, Bulgaria, Spain, Romania, Portugal, Poland, Czech Republic, Netherlands, Hungary, Slovakia, Sweden, and Greece), Robinson and Stubberud (2011) explained some problems with the innovation activities as follows:
 - A. The innovation activity is abandoned at the concept stage in the following ranges: (a) between 2.94% (Bulgaria) and 33.01% (Greece) in small firms, (b) between 2.55% (Bulgaria) and 40.47% (Sweden) in medium firms, and (c) between 1.99% (Bulgaria) and 63.6% (Sweden) in large firms. In the case of Austria, neither small, nor medium, nor large firms indicated occurrences.
 - B. The innovation activity is abandoned after it began: (a) between 4.79% (Bulgaria) and 20.94% (Slovakia) in small firms, (b) between 2.81% (Bulgaria) and 19.36% (Netherlands) in medium firms, and (c) between 3.64% (Bulgaria) and 46.86% (Sweden) in large firms. In the case of Austria, neither small, nor medium, nor large firms indicated occurrences.
14. The introduction of the innovative products into the market doesn't have a previous validation with early adopters with similar characteristics to the target consumers. As a result, the consumers of the target market don't buy

the innovative product and the organization fails in its introduction, with the corresponding waste of time, effort, and money. In this sense, Dougherty and Hardy (1996) indicated that “at the level of the particular product, problems include positioning the product strategically in the market, development production, marketing, and sales, securing expertise, managing external relations (Kazanjian, 1988), understanding new markets (Cooper, 1983; Leonard-Barton, 1991), forming multifunctional teams and sharing knowledge (Ancona & Caldwell, 1990; Dougherty, 1992), and evaluating progress (Griffin & Page, 1993)” (p. 1121). Additionally, in a comparison of some European countries (Austria, Bulgaria, Spain, Romania, Portugal, Poland, Czech Republic, Netherlands, Hungary, Slovakia, Sweden, and Greece), Robinson and Stubberud (2011) explained the following issues:

- A. Lack of information on the markets: (a) between 1.72% (Slovakia) and 35.57% (Greece) in small firms, (b) between 1.42% (Slovakia) and 31.88% (Greece) in medium firms, and (c) between 2.22% (Hungary) and 52.09% (Greece) in large firms. In the case of Sweden, neither medium nor large firms indicated occurrences.
- B. Markets dominated by established enterprises: (a) between 5.25% (Netherlands) and 23.81% (Greece) in small firms, (b) between 3.68% (Netherlands) and 24.69% (Greece) in medium firms, and (c) between 3.88% (Hungary) and 27.44% (Greece) in large firms. In the case of Sweden, neither small nor medium firms indicated occurrences.
- C. Uncertain demand for innovative goods or services: (a) between 3.73% (Netherlands) and 23.41% (Greece) in small firms, (b) between 4.04% (Netherlands) and 20% (Greece) in medium firms, and (c) between 6.13% (Netherlands) and 33.49% (Greece) in large firms. In the case of Sweden, neither small, nor medium, nor large firms indicated occurrences.

Problem Statement

Based on the literature review performed, there was not found a methodological proposal for improving the innovation maturity of the organizations to the level 3 of I2MM, integrating the good practices of strategic management, project management, innovation management, knowledge management, and financial management, according to the processes of the value generation of the organizations. This situation delays the adoption and the implementation of good practices of the innovation management, which would improve the accomplishment of goals in the organizations.

Purpose of the Study

To develop a methodological proposal for improving the management of the innovation maturity until the level 3 of the I2MM, considering an integrated approach which includes the good practices of strategic management, project management, innovation management, knowledge management, and financial management.

Theoretical Framework

The main topics for understanding the innovation management and the methodological proposal MIM3 are the following:

Table 1

Some Topics of the Theoretical Framework of Innovation Management

Topic	Details of the Topic
Foundations of Innovation	Concepts, parts, and types of innovation
Innovation models and innovation management processes	(a) The Creative Process, (b) Classic Process of Staging and Gating of an Innovation Project, (c) Proof of Concept and Pilot Studies, (d) Integrated Innovation Maturity Model (I2MM), (e) Seeking Solutions Approach, (f) 3-Stage Roadmap towards becoming a sustainable organization, (g) Design Thinking, (h) Goodyear's business model innovation process, (i) FastWorks Framework, (j) InnoCamp Model, (k) Lean Innovation Model, and (l) Lean Startup
Standards related to the innovation management	(a) UNE 166002:2014 R&D&I Management: R&D&I management system requirements, (b) ONR CEN/TS 16555-1 Innovation Management – Part 1: Innovation Management System (prCEN/TS 16555-1:2012), (c) ISO/TC 279 Innovation management, and (d) BS 7000-1:2008 Design Management Systems – Part 1: Guide to Managing Innovation
Project Management Frameworks and Methodologies	(a) Project Management Body of Knowledge and (b) Critical Chain
Yellow pages of Knowledge Management	Definition and components of the yellow pages of knowledge management
Financial Criteria for the evaluation of Innovation Management	(a) Free Cash Flow, (b) Direct Costing, (c) Total Cost of Ownership, and (d) MEVGIT

Foundations of Innovation

According to Ahmed, Shepherd, Ramos, and Ramos (2012), the innovation includes two parts: (a) the generation of an idea or invention, and (b) the successful commercialization of that idea or invention; in other words: innovation = invention + level of use (p. 5). Ahmed, Shepherd, Ramos, and Ramos (2012) also indicated that the innovation could be classified as follows: social innovation, strategic innovation, philosophic innovation, process innovation, product innovation, and politics innovation. Additionally, British Standards (2008) defined innovation as follows:

1. As ideas, innovation is the “successful exploitation of new ideas” (p. 9).
2. As a process, innovation is the “introduction of changes that are significant departures from the usual way of doing things” (p. 9).
3. As a product, innovation is the “transformation of an idea into a novel product, operational process or new service” (p. 9).
4. As techniques or materials, innovation is the “employment of design or construction techniques, or materials, that do not have a proven history of performance or are not covered by an organization’s current practice” (p. 9).

British Standards (2008) also defined the innovation management system as follows: “formal infrastructure encompassing objectives, strategies and processes, organizational structures and values by which an organization administers innovation” (p. 10). As can be appreciated, the innovation management is cross-sectional to the diverse processes or areas in the organizations, and must be developed taking into account the diverse related topics.

Innovation Models and Innovation Management Processes

The literature review highlighted the existence of diverse innovation models and diverse innovation management processes. In this sense, O’Raghallaigh, Sammon, and Murphy (2011) classified the innovation models based on their following characteristics:

1. Timeframe: (a) 1950s to late 1970s, (b) Mid-1970s to mid-1980s, and (c) Mid-1980s-present.
2. Generations (model exemplars): (a) First Generation (Technology-Push), (b) Second Generation (Market-Pull), (c) Third Generation (Chain-Linked), (d) Fourth Generation (Cooperative R&D), and (e) Fifth Generation (Systems Integration and Networking: SIN).
3. R&D: (a) An increase in R&D results in more innovation-oriented output, (b) Emphasizes how R&D interacts with market forces, and (c) Emphasizes cooperative R&D and the links between independent agents.
4. Knowledge source: (a) Internal scientific research is the main knowledge

source, (b) Internal scientific research as well as knowledge acquired from other (mainly) internal sources, and (c) Knowledge acquired from both internal and external sources.

5. Market forces: (a) For technology-push the market forces are largely ignored. For market-pull the market forces direct the R&D investment, (b) Market forces interact with R&D decision-making, and (c) Horizontal and vertical alliances respond to market changes.

Some innovation models or innovation management processes, which were found in the literature, were the following: (a) the creative process, (b) the classic process of staging and gating of an innovation project, (c) the proof of concept and pilot studies, (d) the Integrated Innovation Maturity Model (I2MM), (e) the Seeking Solutions approach, (f) 3-Stage Roadmap towards becoming a sustainable organization, (g) Design Thinking, (h) Goodyear's business model innovation process, (i) FastWorks Framework, (j) InnoCamp Model, (k) Lean Innovation Model, and (l) Lean Startup. These innovation models of innovation management processes are explained in the following paragraphs.

About the creative process, Gibney (1998) indicated that the majority of psychologists used different terms to identify the phases of the creative processes, and that this process can be broken into the following five stages:

- (a) Stage One: Immersion,
- (b) Stage Two: Incubation,
- (c) Stage Three: Insight,
- (d) Stage Four: Evaluation,
- (e) Stage Five: Elaboration.

With regards to the classic process of staging and gating of an innovation project, Cohendet and Simon (2015, p. 9) indicated that the classic process of staging and gating of an innovation project has the following steps:

- (a) Idea generation,
- (b) Building business case,
- (c) Development,
- (d) Testing and valuation,
- (e) Launch.

Cohendet and Simon (2015) also indicated that idea generation must be joined to the knowledge management and the innovation process, with coupling mechanisms, such as: "communities, boundary spanners, boundary objects, knowledge brokers, knowledge management platforms, modularity, etc." (p. 10). In the described innovation processes, the lack of inclusion of the alignment to the strategic objectives of the strategic plan, and the lack of inclusion of financial aspects are critical, because in the case of firms, the value generation is measured mainly by the financial value generation.

Thabane, Ma, Chu, Cheng, Ismailia, Rios, Robson, Thabane, Giangregorio, and Goldsmith (2010) explained that a proof-of-concept (PoC) study is “a clinical trial carried out to determine if a treatment (drug) is biologically active or inactive (Doughterty & Hardy, 1996). PoC studies usually use surrogate markers and endpoints” (p. 3). Newfoundland Labrador (n. d.) also explained that a proof of concept is “the delivery of a working system to prove that the technology works and functions as intended” (p. 7) and that “it is usually small and may or may not include all functionality; instead, it refers to a partial solution that involves a relatively small number of users” (p. 7). Finally, Newfoundland Labrador (n. d.) indicated that “once complete, the PoC should be dismantled and considered complete after the results have been documented” (p. 7). The proof of concept is a basic step for developing the innovations, overall for avoiding the possible failures due to that it is better to fail in the earliest phases for reducing the costs of the investments on innovations and for avoiding the frustration of the innovative people.

Thabane *et al.* (2010, p. 3) also indicated that a pilot study is “a small single-centre study” and “a small study that is similar in size to someone else’s published study”. Newfoundland Labrador (n. d., p. 11) also indicated that a pilot is “an initial prototype of a system into production, targeting a limited scope of the intended final solution” and that “the purpose of a pilot project is to test, often in a production environment, whether the system is working as it was designed while limiting business exposure” (p. 11). The definition of Proof of Concept Study can be summarized as a very small study which purpose is the validation of the functionality of the application of the innovative idea. Also, the definition of Pilot Study can be summarized as a small study which is developed after the proof of concept study, and which purpose is to elaborate and prove an initial prototype of the final solution in a real small case.

One of the main models for determining the maturity level of innovation management of the organizations is the I2MM, which was proposed by Müller-Prothmann and Stein (2011) for Lean Assessment of Innovation Capability with five levels and the following characteristics:

1. *Level 1: Chaotic.* Chaotic organization, disorganized, unregulated, without integration with stakeholders, conservative, firefighter behavior, and non-integrated communication.
2. *Level 2: Organized.* Documented processes and sub-processes, although not harmonized, some claims management processes and customer feedback, innovative ideas rejected as unfeasible, identification of stakeholders, and the transfer of knowledge or cooperation with other areas is considered as unimportant.
3. *Level 3: Standardized.* Documented and harmonized processes, minimized risks, learning culture is constant, cooperation with stakeholders has been

improved but remains an exception, the ideas are evaluated and rewarded with incentives, quality management is implemented and harmonized, and benchmarking of markets is developed.

4. *Level 4: Predictable.* Planned and evaluated processes through indicators and expected results, the tools and techniques are accessible to each employee, continuous participation of stakeholders, and the knowledge management stimulates the process improvement.
5. *Level 5: Black Belt.* Processes are improved continuously, organization realizes strategic foresight with knowledge networks inside and outside the organization, innovation methods are suggested by stakeholders, and financial incentives to creativity.

The characteristics of the maturity levels of the I2MM oriented to the organizations to the continuous improvement in the innovation management. In these decades, the use of maturity models is widespread in diverse management topics.

Deutsch (2013) explained the steps of the Seeking Solutions Approach, which were the following: (a) the call for problems (the problem-sourcing phase), (b) problem selection (validation of the problems by ambassadors), (c) problem broadcast (it is developed through a dedicated web tool, being targeted and broad), and (d) Seeking Solutions Event (a real collaborative event) (p. 8). Belkhir (2015) also proposed a 3-stage roadmap of an organization towards becoming a sustainable organization, which reflects the level of maturity of the organization; these were the following:

1. Stage 1: Sustainability Strategy: Organization Alignment & Capability Building

a. Policy:

- Company-wide sustainability training
- Set reductions targets in GHE, energy, resource consumption, and emissions, along with supporting incentive system

b. Entrepreneurship:

- Encourage and reward initiative and risk-taking in the development of novel solutions
- Provide a protected risk capital proof of concept and validation those novel solutions

c. Design:

- Employ sustainable design principles, e.g., modularity, bio-mimicry, recyclability, into the product design process
- Develop quantitative measurement models for sustainability impact, e. g. GHE, toxicity, energy consumptions, water consumption, material reusability

2. Stage 2: Goal Setting: New Products & Services

a. Policy:

- Set strict sustainability compliance targets for suppliers ▪ Set goals and targets for switching to renewable energy

b. Entrepreneurship:

- Institutionalize entrepreneurial culture by promoting the successful ones
- Gradually shift resources towards emerging business and scale up
- Create new brands and/or businesses that are not tainted by legacy products

c. Design:

- Design new products against strict sustainability criteria
- Design manufacturing processes that meet those same guidelines
- Develop and/or acquire software tools for integrated management of sustainability on a life cycle basis

3. Stage 3: Institutionalization; Disruptive Innovation; New Business Models

a. Policy:

- Mandate 100% renewable energy target internally and 50%+ for suppliers ▪ Become a B-corp
- Hire and fire according to sustainability criteria
- Lead the development of industry standards and share best practice

b. Entrepreneurship:

- Replicate the 3 levers at the business unit level
- Invest in and acquire innovative startups with complementary products and a dedicated sustainability strategy
- Leverage your entrepreneurial core competency to disrupt your competitors

c. Design:

- Design products that combine form, function and aesthetic, but cause zero harm in any stage of their lifecycle, and are >80% reusable.
- Design a supply chain that uses 80%+ renewable energy and state of the art of water preservation
- Design new business models that achieve higher efficiencies throughout your value chain

Brown (2008) defined “design thinking” as follows: “a discipline that uses the designer’s sensibility and methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity” (p. 96). Mootee (2013) also indicated that “design thinking” is the search for a magical balance between business and art, structure and chaos, intuition and logic, the concept and execution, the playful spirit and the formality, and the control and the freedom (p. 32). Additionally, Rim (2012) indicated the design-thinker characteristics: (a) Human and environment centered

concern, (b) ability to visualize, (c) predisposition toward multifunctionality, (d) systemic vision, (e) ability to use language as a tool, (f) affinity for teamwork, and (g) avoiding the necessity of choice. Brown (2008) also described the characteristics to look for in design thinkers: (a) empathy, (b) integrative thinking, (c) optimism, (d) experimentalism, and (e) collaboration. Furthermore, Brown (2008, p. 88) explained how design thinking happens:

A. Inspiration: Expect Success

- a. Build implementation resources into your plan.
- b. What's the business problem? Where's the opportunity? What has changed that soon may change? c. Look at the world: observe what people do, how they think, what they need and want
- d. What are the business constraints (time, lack of resources, impoverished customer base, shrinking market)?
- e. Pay close attention to "extreme" users, such as children or the elderly. f. Have a project room where you can share insights, tell stories.
- g. How can new technology help?
- h. Are valuable ideas, assets, and expertise hiding inside the business? i. Organize information and synthesize possibilities (tell more stories)

B. Ideation: Brainstorm

- a. If it is necessary, back to steps "h" and "i" of the inspiration. b. Make many sketchers, concoct scenarios.
- c. Build creative frameworks (order out of chaos). d. Apply integrative thinking.
- e. Put customers in the midst of everything; describe their journeys. f. Prototype, test, prototype, test, ...
- g. Tell more stories (they keep ideas alive).
- h. Communicate internally – don't work in the dark!
- i. Prototype some more, test with users, test internally.

C. Implementation: Execute the Vision

- a. Help marketing design a communication strategy.
- b. Make the case to business - spread the word.
- c. Move on to the next project – repeat. d. Go to "A. Inspiration" Phase.

In the previous decades, Design Thinking was one of the most popular innovation models of the organizations in the world. Lugmayr, Stockleben, Zou, Anzenhofer, and Jalonen (2014) also indicated that Stanford created the following design thinking phases: (a) empathize, (b) define, (c) ideate, (d) prototype and (e) test, and also, showed and improved the version created by Plattner, which included the self-learning at the beginning and the business plan at the end, converting the seven design thinking's phases as follows: (a) self-learning, (b) empathize (which included observe and understand), (c) define (includes the setting of a point of view), (d) ideate,

(e) prototype, (f) test, and (g) business plan. Dunne and Martin (2006) also proposed the cycle of design thinking as follows: (a) generate ideas (abduction), (b) predict consequences (deduction), (c) test, and (d) generalize (induction). Additionally, Rim (2012) proposed her adapted “design thinking competency model”, which includes the following competencies:

A. Demonstrate Design Thinking (DT) Skills

- a. Locate/Use Resources
 - i. Identify needs and set goals
 - ii. Find Resources:
 - Seek up-to-date resources
 - Employ up-to-date resources
 - iii. Analyze and Synthesize Resources
 - Combine info from different resources
 - Generate ideas from information
 - iv. Discern Resources
 - Assess resource credibility
 - Assess resource quality
 - v. Create Argument
 - Pose argument based on evidence
- b. Iterate Diagrams
 - i. Tinker
 - Experiment with a system
 - Break down a system
 - Model/prototype a system
 - Build theory
 - ii. Create
 - Create models
 - iii. Test
 - Test model
 - Generate feedback
 - Modify model/redesign
 - Reevaluate model
 - Make decision (accept/reject model)
- c. Innovate Design
 - i. Design context
 - Recognize opportunities for innovation based on research
 - ii. Design process
 - Innovate roach(es) to iteration
 - iii. Design esthetics
 - Represent innovation in an aesthetically coherent way

B. Use DT terminology

- a. Understand DT terms
 - i. Identify DT terms (*e.g.*, sketches, prototype, iteration, action plan, and so on)
 - ii. Apply DT terms in the right context

C. Employ DT Behavior

- a. Show persistence
- b. Manage time
- c. Adapt parameters on demand

Brown (2008, p. 90) explained how to make design thinking part of the innovation drill: (a) begin at the beginning, (b) take a human-centered approach, (c) try early and often, (d) seek outside help, (e) blend big and small projects, (f) budget to the pace of innovation, (g) find talent any way you can, and (h) design for the cycle. Dougherty and Hardy (1996) also indicated that:

The literature suggests that for a mature organization to develop the capacity for sustained innovation, it must successfully make these innovation-to-organization connections in three key areas: (1) make resources available for new products, (2) provide collaborative structures and processes to solve problems creatively and connect innovations with existing businesses, and (3) incorporate innovation as a meaningful component of the organization's strategy. (p. 1122)

Euchner and Ganguly (2014) explained the Goodyear's business model innovation process, which has the following processes: (a) demonstrate value creation, (b) generate business model options (coherence, competitiveness, path to profits), (c) identify risks for each option (execution, co-innovation, adoption), (d) prioritize risks, (e) reduce risk through business experiments, and (f) organize for incubation (p. 34). Merfeld (2014) also proposed the FastWorks framework, which includes the following processes: (a) understand the customer's need, (b) identify leap-of-faith assumptions, (c) define your minimum viable products (MVPs), (d) establish learning metrics, and (e) pivot or persevere (p. 30). Additionally, Kaski, Alamäki and Moisio (2014) explained the InnoCamp model, as a rapid innovation method, tested at Vierumäki Sport Institute for two days with sport companies, which were looking for new ideas or solutions for their existing sport services and products. The processes of InnoCampo, for pre-assignments, the first and the second day, were the following:

A. Pre-Assignments

- Pre-understanding

B. First Day

- Company task sharing
- Idea Creation: Several methods ▪ Evaluations

C. Second Day

- Selection
- Improvement, concept creation ▪ Selling, pitch

Frederic, Lam, and Martin (2014, p. 103) introduced a Lean Innovation Model, with the following processes: (a) Start; (b) Conduct initial assessment; (c) Identify gaps and ITAG actions. ITAG means Innovation Transformation Action Grid (ITAG) and is composed by Culture, Process, and Infrastructure; (d) Implement ITAG actions; (e) Conduct assessment; and (f) Back to step C; and Nientied (2015) explained that the concept of “Lean Startup” was introduced by the entrepreneur Eric Ries in 2011 in his book “The lean startup, How today’s entrepreneurs use continuous innovation to create radically successful business”. Nientied (2015) also indicated that Lean Startup is “a system for developing a business or product in the most efficient way possible to reduce the risk of failure” (p. 20), and relies on “structured experimentation, iterative product releases, and customers’ feedback to generate validated learning” (p. 20). Additionally, Nientied (2015, p. 21) explained that Ries used five principles for the lean startup’s approach:

1. Entrepreneurs are everywhere – not just in a garage, but in any size company.
2. Entrepreneurship is management – a startup is an institution, not just a product.
3. Validated learning – a startup learns how to build a sustainable business; it is not there to just make stuff or money.
4. Build-measure-learn – a startup is to turn ideas into products, measure how customers respond and then learn whether to pivot or persevere (*i.e.*, a feedback loop).
5. Innovation accounting – a new way of accounting is needed to measure progress, set up milestones, and prioritize work.

Nientied (2015) also indicated the Ries’ feedback loop “Build-Measure-Learn”, as follows: (a) ideas, (b) build, (c) product, (d) measure, (e) data, and (f) learn. As was presented, the diverse methods and models have been centered in the creative processes and construction of the products; however, did not integrate the diverse management topics related to the innovation management.

Standards Related to the Innovation Management

The most known standards related to the innovation management are the following:

1. The UNE 166002:2014 R&D&I Management: R&D&I management system requirements. This standard has the following components:
 - A. *Context of the organization*
 - a. Knowledge of the organization and its context
 - b. Comprehension of the needs and expectations of the stakeholders
 - c. Management system of the R&D&I

B. Leadership

- a. Vision and strategy of the R&D&I
- b. Policy of the R&D&I
- c. Leadership and commitment of the management
- d. Promotion of an innovation culture
- e. Roles, responsibilities, and organizational authorities

C. Planning

- a. Risks and opportunities
- b. Purposes of the R&D&I and plan for obtaining them

D. Support of the R&D&I

- a. Organization of the roles and responsibilities
- b. Resources
- c. Competencies
- d. Awareness
- e. Communication
- f. Documented information
- g. Intellectual and industrial property, and knowledge management
- h. Collaboration
- i. Technological surveillance and competitive intelligence

E. Operating Processes of R&D&I

- a. Generalities
- b. Management of Ideas
- c. Development of R&D&I projects
- d. Protection and exploitation of the results
- e. Introduction to the market
- f. Results of the operating processes of the R&D&I

F. Performance Evaluation of the Management System of R&D&I

- a. Monitoring, measuring, analysis and evaluation
- b. Internal Audit
- c. Evaluation by the Management

G. Improvement of the Management System of R&D&I

A guide for implementing the UNE 166002:2006 to firms in the residential building, was found in Gil, Varela, and González (2008). This is the closest approximation to this methodological proposal; however, the scope of MIM3 is broader than the previous one, due to the details which will be observed in the the “Methodological Proposal” section.

2. ONR CEN/TS 16555-1 Innovation Management – Part 1: Innovation Management System (prCEN/TS 16555-1:2012). This standard refers the following parts of the management innovation:

Part 1: Innovation Management System,

Part 2: Strategic Intelligence Management,
 Part 3: Innovation Thinking,
 Part 4: intellectual Property Management,
 Part 5: Collaboration Management,
 Part 6: Creativity Management,
 Part 7: Innovation Management Assessment
 (Austrian Standards Institute, 2013).

3. ISO/TC 279 Innovation management. The scope of this standard is the standardization of the terminology tools, methods, and interactions among the relevant parties to enable innovation in the organizations (ISO, 2013).
4. BS 7000-1:2008 Design Management Systems – Part 1: Guide to Managing Innovation. The scope of the BS 7000-1:2008 (British Standards, 2008, p. 15) includes the following phases and stages:

A. Phase 1: Explore the Potential / Set the Context

- a. Stage 1: Review the current innovation practices to determine the potential for improvement
- b. Stage 2: Create future vision
- c. Stage 3: Draw up mission statement related to innovation
- d. Stage 4: Distil innovation objectives and strategies from the organization's objectives and strategies

B. Phase 2: Establish foundation

- a. Stage 5: Determine the innovation highway
- b. Stage 6: Plan introduction of organization's new approach to innovation
- c. Stage 7: Communicate essence of innovation mission, objectives and strategies
- d. Stage 8: Promote innovation nurturing culture
- e. Stage 9: Reinforce infrastructure and expertise to manage innovation

C. Phase 3: Implement changes

- a. Stage 10: Draw up master innovation programme
- b. Stage 11: Implement programme and support new approach to innovation
- c. Stage 12: Evaluate progress and contribution of master innovation programme

D. Phase 4: Build on expertise and enhanced reputation

- a. Stage 13: Build distinctive competencies and competitive advantage through innovation
- b. Stage 14: Document, share, publicize and celebrate achievements through innovation

- c. Stage 15: Enhance organization's reputation through innovation
- d. Stage 16: Review and refine overall approach to innovation.

Project Management Methodologies

The most important project management methodologies which were found in the literature are the following: Project Management Body of Knowledge (PMBOK) and Critical Chain. The Project Management Institute (2013) proposed for the project management in its PMBOK, the following groups of processes:

- (a) initiation,
- (b) planning,
- (c) execution,
- (d) monitoring and control,
- (e) closing processes.

The Project Management Institute (2013) also proposed in its PMBOK, the following knowledge areas of the project management:

1. Integration Project Management. It includes the following processes: a) to develop the project charter, b) to develop the management plan of the project, c) to direct the execution of the project, d) to monitor the work of the project, e) to develop an integrated control, and e) to close the phase or project.
2. Project Scope Management. It includes the following processes: a) scope management plan, b) gather requirements, c) to define the scope, d) to create the work breakdown structure, e) to validate the scope, and f) to control the scope.
3. Project Time Management. It includes the following processes: a) Schedule management plan, b) to define the activities, c) to sequence the activities, d) to estimate resources of activities, e) to estimate the duration of activities, f) to develop the schedule, and g) to control the schedule.
4. Project Cost Management. It includes the following processes: a) to plan the management of costs, b) to estimate the costs, c) to prepare the cost budget, and d) to control costs.
5. Project Quality Management. It includes the following processes: a) to plan the quality management, b) to realize the quality assurance, and c) to control the quality.
6. Project Human Resources Management. It includes the following processes: a) to plan the management of human resources, b) to contract the project team, c) to develop the project team, and d) to direct the project team.

7. Project Communications Management. It includes the following processes: a) to plan the management of the communications, b) to manage the project communications, and c) to control the communications.
8. Project Risk Management. It includes the following processes: a) to plan risk management, b) to identify risks, c) to analyze risks qualitatively, d) to analyze risks quantitatively, e) to plan risk response, and f) to control risks.
9. Project Procurement Management. It includes the following processes: a) to plan the procurement management plan, b) to execute the acquisitions, c) to control the acquisitions, and d) to close the acquisitions.
10. Project Stakeholder Management. It includes the following processes: a) to identify stakeholders, b) to plan the management of stakeholders, c) to manage the stakeholder participation, and d) to monitor the participation of stakeholders.

For the time management of the projects, Goldratt (1997) proposed the critical chain methodology, which is based on the methodology of five steps for the continuous improvement of the Theory of Constraints, and has the following steps:

A. Step 1: To identify the constraints of the system.

This step consists of the identification of the critical chain, which is different to the critical path. The critical chain is the largest sequences of tasks, considering not only the time, whether considering the time and the resources for developing the tasks.

B. Step 2: To decide how to exploit the constraints of the system.

This step consists of the decision of cutting the slack time of the time estimation of tasks and put the slack time as a project buffer at the end of the project for protecting the whole project and not each one of the tasks.

C. Step 3: To subordinate all the tasks to the previous decision.

This step consists of the introduction of slack time to the tasks before the task which are parts of the critical chain. Also, this step consists of the introduction of a buffer of resources, which is implemented through the continuous previous communication to the resources whom will support to a project, with the purpose that be available for attending the tasks of the project when the personnel or the tasks of the project needs the support.

D. Step 4: To increment the capacity of the system.

This step consists of hiring more personnel or acquiring more equipment for improving the velocity of the system.

E. Step 5: To back to the step one and doesn't permit that the inertia causes a constraint.

This step consists of the periodic evaluation of the critical chain for being sure that the time protection is put in the right way.

The critical chain methodology must be implemented to each one of the projects and for the whole project management system. Goldratt (1997) proposed the criteria of a resource, for prioritizing the attention to a task: (a) end date of the project, (b) type of task which requires the attention, (c) consumption of the project buffer, and (d) consumption of the feed buffer (slack time before the tasks which are parts of the critical chain). Goldratt (1999) also proposed the management indicators for project management: (a) advance percentage of the critical chain of the project, (b) proportion of the consumption of the project buffer and the finished portion of the critical chain, and (c) consumption velocity of the project buffer.

Yellow Pages of Knowledge Management

Bagnoli and Vedovato (2014) explained about the use of information and communication technologies for knowledge management, indicating that “a large variety of tools, instruments and approaches, ranging from internal bulletin boards, to corporate Yellow Pages of who knows what” (p. 536) are leading the solutions for archiving and storing the knowledge. Grant (2013) also explained that “most of the companies we studied have instituted some form of ‘expert locator’ or ‘corporate yellow pages’ that enables individuals with particular experiential knowledge to be identified and contacted” (p. 98). Additionally, Pinho, Rego and Cunha (2012) indicated that yellow pages are registers about “who knows what” (p. 220).

Financial Criteria for Evaluating the Innovation Management

The financial criteria for evaluating the innovation management must include the following theoretical framework: free cash flow, direct costing, total cost of ownership, and MEVGIT. Chih-Chang (2013) indicated that free cash flow is “the balance of cash inflows and outflows” (p. 1). Chih-Chang (2013) also explained that free cash flow indicates “the ability of corporations to expand, and is commonly known by stock market analysts as capital expenditures” (p. 1). Additionally, Kousenidis (2006, p. 649) explained that the majority of finance text books defined free cash flow as follows: “the after tax operating earnings of a company plus non-cash charges less investment in working capital, property, plant and equipment, and other assets (Copeland *et al.*, 1991)”; Kousenidis (2006) also indicated that free cash flow “requires that cash flow does not incorporate any financing-related cash flows, such as interest expense or dividends” (p. 649).

About the direct costing, Klychova, Zakirova, Zakirov, and Valieva (2015) indicated that “is intended to include in the cost of production and ending stocks estimate only variable production costs and allocation on financial result of the total amount of fixed costs without distribution by product types” (p. 308). Klychova *et al.* (2015) also explained that: “the purpose of this method is increasing the speed of decision-making on pricing and possibility of analyzing the relationship of the costs, volume of production (sales) of products and profit (CVP-analysis) as well as analysis of break-even point” (p. 308). Additionally, Iotti and Bonazzi (2014) explained that “the direct costing assigns only the costs directly attributable to the individual productions, while overhead costs are not allocated and are briefly summarized at the close of the reclassified income statement” (p. 1492).

Bibo (2014) explained that the Total Cost of Ownership (TCO) is “a technique which can be used to make sure that all associated costs over a given time period are considered” (p. 89). Laudon and Laudon (2012, p. 196) also indicated that the total cost of ownership of technology assets must include:

- A. *Hardware acquisition*: Purchase price of computer hardware equipment, including computers, terminals, storage, and printers.
- B. *Software acquisition*: Purchase or license of software for each user.
- C. *Installation*: Cost to install computers and software.
- D. *Training*: Cost to provide training for information systems specialists and end users and *Support*: Cost to provide ongoing technical support, help desks, and so forth.
- E. *Maintenance*: Cost to upgrade the hardware and software.
- F. *Infrastructure*: Cost to acquire, maintain, and support related infrastructure, such as networks and specialized equipment (including storage backup units).
- G. *Downtime*: Cost of lost productivity if hardware or software failures cause the system to be unavailable for processing and user tasks.
- H. *Space and energy*: Real estate and utility costs for housing and providing power for the technology.

TCO can be used not only for information technology projects. Diverse types of projects can use the indicated criteria if the information technology assets are replaced by other types or assets. Finally, Alfaro (2017) proposed the Methodology for Evaluating the Value Generation of Information Technologies (MEVGIT), which consists of the following steps:

- A. *To calculate the additional inflow*, which will be collected by the product or result of the project.
 - a. To calculate the additional contribution margin (in the case of firms) or the additional gross domestic product (in the case of nonprofit governmental entities) due to the product or result of the project

For firms:

- i. To calculate the additional contribution margin due to the increase of sales to the current clients.
- ii. To calculate the additional contribution margin due to the increase of sales to new clients.
- iii. To calculate the additional contribution margin due to the organization would avoid the loss of sales.
- iv. To calculate the additional contribution margin due to the reduction of the variable cost of sales.

For nonprofit governmental organizations:

- i. To analyze how to convert the nonfinancial benefits with the goods or services of the nonprofit governmental entities, to amounts of gross domestic product.
 - ii. To calculate the amount of gross domestic product which will be increased through the product or result of the project.
- b. To calculate the savings due to the product or result of the project
- i. To calculate the savings due to the reduction of investments.
 - ii. To calculate the savings due to the reduction of expenses.
- B. *To calculate the additional outflows*, which will be collected by the product or result of the project.
- a. To calculate the additional investments: hardware acquisition, software acquisition, installation, infrastructure, furniture and equipment, and others
 - b. To calculate the additional expenses: personnel, advertising, training, support, maintenance, inactivated time, space and energy, and others
- C. *To calculate the net flow*. The calculation of the net flow is the difference of the additional inflows and the additional outflows.
- D. *To estimate the discount rate*. The discount rate must consider the following criteria: (a) to be higher than the risk-free rate, (b) to be higher than the average return on investment of the firms of the economic sector of the country or region, (c) to be higher than weighted average cost of capital, and (d) to be equal or greater than a minimum discount rate that the board of directors determined.
- E. *To calculate the net present value*. For calculating the net present value, the discount rate and the net flow must be considered. Each one of the net flow at the end of each period must be discounted dividing $(1 + \text{discount rate})^i$, where “i” is each one of the periods. The sum of the discounted net flows of each period will be the net present value.

The Proposed Methodology: MIM3

The proposed MIM3 methodology integrates the generation of ideas of innovative projects in an aligned manner with the strategic planning of the organizations through the concordance with the organizational purposes and goals of the organizations and the areas or processes of the organizations joined to the manner in which the innovative project idea will contribute to the goals searching the quantification of the impact. MIM3 also includes the knowledge areas (integration management, scope management, time management, cost management, quality management, human resources management, communications management, risk management, acquisitions management and stakeholders management) of the project management according to Project Management Body of Knowledge (Project Management Institute, 2013) in a summarized manner and the use of the Critical Chain (Goldratt, 1997), with the processes of some of the main innovation models and innovation methods which were found in the literature review, considering the good practices of the standards of innovation management.

MIM3 also includes some knowledge management good practices, such as the yellow pages and the evaluation of the value generation of the innovative projects with a procedure based on the MEVGIT methodology (Alfaro, 2017), which is also based on free cash flow, total cost of ownership and the direct costing. The proposed methodology (MIM3) needs to be applied to some organizations for validating it rigorously in the practice; however, a first version for the evaluation is finished and is composed by policies, processes and procedures, according to the following explanations:

Policies

The general policies which are necessary for the application of the methodological proposal are the following:

1. This methodological proposal is applicable to all the innovative projects which the personnel want to present in each one of the processes or areas of the organization.
2. The innovation area will maintain a service vocation for all the personnel of the processes or areas, all the time. In this way, the innovation area will support with the corresponding technical knowledge to the diverse proposals of innovation projects.
3. The innovation area will consider “Idea of an Innovative Project” to an idea of project which would generate value and would have a creative or new component for the reality of the process of the organization.

4. The innovation area must receive and evaluate all the ideas of innovative projects which each worker of the organization or its stakeholders consider innovative project.

Processes and Procedures

The processes of the MIM3 methodological proposal are depicted in Figure 1. The processes and procedures of MIM3 are detailed as follows:

1. Generate and evaluate the „Idea of Innovative Project“.

- A. Develop or update the policy framework for the innovation management in the organization (AENOR, 2014). In this policy framework, the percentages of property rights for the innovative projects and the whole norms for the innovation processes must be established; also, it must be aligned to the strategic plan of the organization.

Figure 1. MIM3: Methodology of Innovation Management for obtaining the level 3 of the I2MM in the organizations.

- B. Hire training about the state of art knowledge related to the economic sector and the markets of the organization, according to the strategic plan of the organization. This training must be part of a continuous and sustainable training of the organization (Belkhir, 2015). Also, this training must stimulate the development of the characteristics of design thinkers into the personnel of the organization (Rim, 2012; Brown, 2008). According to Rim (2012), the design-thinker characteristics are the following: (a) Human and environment centered concern, (b) ability to visualize, (c) predisposition toward multifunctionality, (d) systemic vision, (e) ability to use language as a tool, (f) affinity for teamwork, and (g) avoiding the necessity of choice. Rim (2012) also indicated his adaption to the design thinking's competency model: (a) Demonstrate Design Thinking (DT) Skills, (b) Use DT terminology, and (c) Employ DT Behavior. According to Brown (2008), the characteristics to look for in design thinkers, are the following: (a) empathy, (b) integrative thinking, (c) optimism, (d) experimentalism, and (e) collaboration.
- C. Conduct workshops to analyze the problems of the stakeholders related to our processes. A list of categories of problems of the organization and its processes in relation with is stakeholders must be identified, for a better comprehension of their needs and expectations (AENOR, 2014; Deutsch, 2013). At the end of the workshops, sessions for proposing solutions to the analyzed problems must be obtained.
- D. Get a list of ideas of innovative projects as a result of the workshops or as a result of calls for internal or external competitions (Deutsch, 2013).
- E. For each innovative project which was presented:
 - a. Assess whether the idea will contribute to achieving organizational goals and objectives: How would contribute to achieving the goal? and How much would be the contribution to achieving the goal? (If it is possible to be calculated) (AENOR, 2014; Project Management Institute, 2013).
 - b. Invite the innovative team to justify the innovative project idea.
 - c. If it is possible to quantify the contribution to achieving the goals: Then
 - i. Formulate, propose, evaluate, and approve or reject the project together in the Evaluation Committee of Innovations.
To prepare the form „FR-MIM3-001-001 Idea of Innovative Project“, please see Table 2 in the Appendix.
Evaluate and / or adjust the “Idea of Innovative Project” exposed in the above form together with the staff of the processes that would be involved. If the project is accepted by majority: Then
Seek approval from the managers of the processes involved.

If the managers of the involved processes approve the project and it is possible to develop the project with the budget of their functional areas,

Then:

Continue with Step 2: Prepare the „To elaborate the Innovative Project Charter“ and „The Plan of the Management of Innovative Project”.

Else

Seek the approval from the Chief Executive Officer, following the relevant administrative channels.

If the Chief Executive Officer approves the idea of innovative project, Then

Continue with Step 2: „To prepare the „Innovative Project Charter“ and the „Plan of the Management of Innovative Project”.

Else

Search technical advice, rethink, or discard the innovative idea. Else

If the team that presented the Idea of Innovative Project persists, Then:

Seek the approval from the managers of the involved processes.

If the managers of the involved processes approve the project and it could be developed with the budget of their functional areas,

Then:

Continue with Step 2: „To prepare the “Innovative Project Charter“ and „Plan of the Management of Innovative Project“.

Else

Seek the approval of the Chief Executive Officer, following the relevant administrative channels.

Else

Search technical advice, rethink or discard the innovative idea.

Else

ii. Search technical advice, rethink, or discard the innovative idea.

2. Prepare the „Innovative Project Charter“ and „Plan for the Management of Innovative Project“.

A. Prepare the „Innovative Project Charter“ using the form „FR-MIM3-002-001

Innovative Project Charter“. The Innovative Project Charter must include the following items: name of the project, high level budget, purpose of the project, justification of the project, scope of the project, phases and results of each phase, and the project team (Project Management Institute, 2013). See Table 3 in the Appendix.

- B. Develop the „Plan for the Management of Innovative Project“ using the „FR-MIM3-003-001 Template for the Innovative Project Management Plan“. See Table 4 in the Appendix. This plan for the management of the innovative project must contain all the phases as was determined in the project management methodology of the organization, including the following:
 - a. Determine the technical feasibility of the innovative project. For this step, you can use the form „FR-MIM3-004-001 Technical Evaluation of the Project“ and the form “FR-MIM3-005-001 Risks Management of the Innovative Project”. See Table 5 and Table 6 in the Appendix, respectively.
 - b. Determine the financial viability of the innovative project. For this step, you can use the form „FR-MIM3-006-001 Financial Evaluation of the Project“. See Table 7 in the Appendix.
 - c. Plan, implement and evaluate the Proof of Concept (Thabane et al., 2010; Newfoundland Labrador, n. d.).
 - d. Plan, implement and evaluate the Pilot Project (Thabane et al., 2010; Newfoundland Labrador, n. d.).
 - e. Implement the Innovative Project.
 - f. Register Learned Lessons (to use the form „FR-MIM3-007-001 Registration of Innovative Project’s Learned Lessons“, which is in the Table 8 in the appendix one) and Form of Project Closure (use the form „FR-MIM3-008-001 Form of Project Closure“, which is provided in Table 9 in the Appendix).

Further, the Plan for the Management of the Innovate Project must be aligned to the project management methodology of the organization, in compliance with the best practices of project management, including the following processes (Project Management Institute, 2013):

- (a) integration management,
- (b) scope management,
- (c) time management,

- (d) cost management,
- (e) quality management,
- (f) human resources management,
- (g) communication management,
- (h) risk management,
- (i) procurement management,
- (j) stakeholders management.

3. *Determine the technical feasibility of the innovative project.*

- A. Investigate diverse alternatives for implementing the innovative project, in the national and global market, in academic and business sources with recognized prestige, such as:
 - a. Studies of market research companies: Gartner, Forrester, IDC or other firm to which the organization has the access.
 - b. Literature review articles or investigations of prestigious academic sources, such as: EBSCO, Proquest, JSTOR, Hinari, Google Scholar, Social Science Research Network (SSRN Database), Cybertesis, Dialnet, virtual libraries of central reserve banks, virtual libraries of universities, among others, depending of the characteristics of the type of innovation.
 - c. Public information of the providers of the diverse types of innovations: theories, methodologies, technologies, etc.

In the case that due to the nature of the innovative project, the staff of the innovation area does not have the competences or sufficient experiences to develop this activity, the innovation area should hire individuals or firms, which can develop consultancy works on these issues for the organization.

- B. Develop preliminary technical specifications and / or preliminary terms of reference, which detail the requirements for developing the innovative project.
- C. Request the submission of technical and financial proposals to suppliers, taking in account the technical specifications and / or terms of reference (on the basis of the preliminary technical specifications and / or preliminary terms of reference). This information must be provided to a minimum of three suppliers (ideally should be sent to all suppliers to which the organization has access).

- D. Evaluate the technical proposals (technical specifications and / or improved terms of reference) which were sent by each supplier and next, to complement and / or correct the technical specifications and / or terms of reference with the information taking into account the relevant information for each supplier.
 - E. Validate the specifications and / or terms of reference made in the previous point, with the staff of the processes with whom the project would be developed or applied.
 - F. Elaborate calculations to estimate the improvements (time, increase of goals, efficiency, effectiveness, etc.) under three scenarios: pessimistic, average and optimistic.
 - G. Use the form “FR-MIM3-004-001 Technical Evaluation of the Project” for evaluating the diverse criteria and determining the scores of the technical possible solutions.
 - H. If the results of scores of the previous point are positive: Then
 Declare that the innovative project is technically feasible.
 Continue with the step 4: To determine the financial viability of the innovative project.
 Else
 Seek additional technical assistance, rethink or refute the innovative project.
4. *Determine the financial viability of the innovative project.*
- A. Evaluate the financial proposals which have been received from suppliers and that were requested in point 3 C.
 - B. Calculate the net present value of the innovative project with the direct costing and the total cost of ownership approaches, taking into account the following aspects: additional inflows (additional contribution margins and savings), additional outflows (additional investments and additional expenses), the evaluation period and the discount rate (minimum attractive return rate), which was determined by the Finance Area of the organization. It must consider three scenarios: pessimistic, average, and optimistic. For detailing the costs, to elaborate the form “FR-MIM3-009-001 Budget of Outflows of the Innovative Project”, please refer to Table 10 in the Appendix. For calculating the net present value, use the form “FR-MIM3-006-001 Financial Evaluation of the Innovative Project” (Chih-Chang, 2013; Klychova *et al.*, 2015; Bibo, 2014; Laudon & Laudon, 2012; Euchner & Ganguly, 2014).

C. If the net present value of the optimistic and average scenarios is positive:

Then

Declare the financial viability of the innovative project.

Continue with step 5 „plan, implement and evaluate the „Proof of Concept“.

Else

Declare that the project is not financially viable, unless the innovative project is not a generator of income or if the investment for the project is very high.

5. *Plan, implement, and evaluate the „Proof of Concept“.*

A. Prepare the schedule of the „Proof of Concept“ with the form “FR-MIM3-010-001 Schedule of the Innovative Project”, please refer to Table 11 in the Appendix.

B. Run the „Proof of Concept“.

a. Empathize with the customer or end user and get information about your problem (Lugmayr *et al.*, 2014; Merfeld, 2014).

b. Define the problem to be solved for the customer or end user, more clearly (Lugmayr *et al.*, 2014).

c. Devise the resulting product of the project, more accurately.

d. Develop a prototype of the product resulting from the project. If the project team considers adequate for giving an order to the elaboration of the prototypes, use the form “FR-MIM3-011-001 Control of Changes of the Innovative Project”, per each change in the prototype. To this aim, see Table 12 in the Appendix.

e. Design the business model for the prototype or the product resulting from the innovative project, at this stage.

f. Assess whether the prototype and the associated business model meet the needs of the customer or end user (Euchner & Ganguly, 2014; Frederic, Lam, and Martin, 2014).

g. If the results were negative and there is still budget:

Then

Return to step „a“.

Else

Go to step „5.C“.

C. Evaluate the development and results of the „Proof of Concept“.

D. If the results of the „Proof of Concept“ are positive:

Then

Communicate the results to the stakeholders, considering the previous elaborated form “FR-MIM3-012-001 Communications Management of the Innovative Project”. See Table 13 in the Appendix. Continue with Step 6: “Plan, implement and evaluate the pilot project”.

Else

Seek additional technical assistance, rethink or refute the innovative project.

6. *Plan, implement and evaluate the pilot project.*

A. Prepare the implementation schedule of the pilot project. This schedule must be developed with the critical chain methodology (Goldratt, 1997; Goldratt, 1999).

B. Run the Pilot Project.

C. Evaluate the development and results of the pilot project.

D. If the results of the pilot project are sitive:

Then

Continue with Step 7: To implement the Innovative Project.

Else

Seek additional technical assistance, rethink or refute the innovative project.

7. *Implement the Innovative Project.*

A. Coordinate the budget.

B. Expand the organization or sequence of processes.

C. Develop a “Plan for the Management of the Pilot Project”.

D. Implement technologies, theories and methodologies associated with the innovative project, according to the “Plan for the Management of the Pilot Project”.

E. Evaluate the successful implementation of technologies, theories, and methodologies associated with the innovative project.

F. Make the necessary adjustments after the evaluation.

8. *Record „Learned Lessons“ to update „Yellow Pages“ and realize the „Closure of the Project“.*

- A. Record „Learned Lessons“ of the innovative project (use the FR-MIM3-007-001 Registration of Innovative Project’s Learned Lessons).
 - a. Record the positive aspects that helped the proper management of the project in each one of its stages, as well as how to implement them.
 - b. Record the negative aspects that did not favor the project management in each one of its stages and how to minimize or eliminate their impact.
 - c. If a knowledge management information system exists, then introduces the information of the learned lessons into this system (Cohendet & Simon, 2015).
- B. Update the „Yellow Pages“ (Bagnoli & Vedovato, 2014; Grant, 2013; Pinho, Rego, & Cunha, 2012) of the innovative project (use the form „FR-MIM3-013-001 Yellow Pages of the Project“). See Table 14 in the Appendix.
 - a. To update the directory of internal experts (staff organization) on issues associated with the innovative project.
 - b. To update the directory of external experts (vendors which were people or firms) on the issues associated with the innovative project.
 - c. If a knowledge management information system exists, then introduces the information of the yellow pages into this system (Cohendet & Simon, 2015).
- C. Perform project closure.
 - a. Perform the administrative closure of the project. This closure should include the development of an article which would be sent to an indexed journal for publication, in addition to the formal closing of each of the stages, the closing of the financial accounts associated with the project, and the other documents required as part of the project management methodology of the organization.
 - b. Perform the closure of contracts that may be associated with the project.

9. *Select the successful and culminated innovative projects and apply for national and international awards or competitions.*
 - A. Review the portfolio of successful and innovative projects that has been developed in the organization.
 - B. Select the innovative projects to be proposed in coordination with the areas or processes of the organization.
 - C. Propose the innovative projects that will postulate, to the Chief Executive Officer.
 - D. Apply for prizes or competitions of innovation, with the innovative projects that the Chief Executive Officer has approved. In the case that the prize is the „Award for Innovation in the organization“ should coordinate the awards with an advance of 6 months prior to such delivery.
10. *Register copyright or inventions, as determined by the Chief Executive Officer or the Board of Directors (Austrian Standards Institute, 2013). This procedure includes the following tasks:*
 - A. Record the projects whose results would have copyright registers (books, trademarks, distinctive signs, etc.).
 - B. Record projects whose results would be converted to registers of innovations (patents, utility models and industrial designs).

Discussion and Conclusion

Diverse innovation models, innovation methods, and innovation processes which were proposed previously for MIM3 didn't have a holistic focus and were based mainly on the creativity processes and the technical aspects related to the construction of the products, leaving aside the value generation, which must be the basic and the most important focus of the innovation management. The approach of the UNE 166002:2014 R&D&I Management: R&D&I management system requirements has the closest characteristics, when compared to MIM3. Then, MIM3 was built as a methodological proposal with a holistic focus, which includes the good practices of the following management areas: (a) strategic management, (b) project management, (c) innovation models and innovation methods, (d) standards for innovation management, (e) knowledge management, and (f) financial management. MIM3 could be difficult to implement in organizations without integrating managers with a strong leadership for meeting the competencies of the personnel associated with the diverse management areas, considering the diverse topics associated with

innovation; furthermore, for the success of the implementation of MIM3 it could be necessary an extensive training about its related topics; however, due to its holistic focus and generic approach, MIM3 could be applied to diverse types of public or private organizations.

Future researches must test MIM3 with early adopter organizations, whose managers could be interested in initiating their innovation processes based on a structured methodology. The type of these organizations would be diverse, such as: high-technology organizations, universities, financial organizations, non-for-profit organizations, among others, depending of the level of maturity of the innovation management of the organization and the need for innovation of the organization in its sector or market. Also, it is necessary to study aspects of knowledge management information systems in the MIM3, such as the implementation of knowledge management information systems for the knowledge production (Business Intelligence – BI - and Customer Relationship Management - CRM- information systems) and knowledge integration (groupware information systems); also, the use of continuous information of market research firms, integrated with the use of the transaction processing information systems, the management information systems, the BI, and the CRM information systems.

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The author would like to thank the anonymous referees for their valuable feedback on the previous version of this manuscript.

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Appendix: Forms of the MIM3

Table 2

FR-MIM3-001-001 Idea of Innovative Project

LOGO OF THE ORGANIZATION	IDEA OF INNOVATIVE PROJECT				CODE OFFER	FR-MIM3-001-001
	APPROVED BY:				START DATE OF THE USE OF THIS DOCUMENT	
	AREA WHICH APPROVES THE DOCUMENTS OF THE QUALITY MANAGEMENT				DD/MM/YYYY	
IDEA OF INNOVATIVE PROJECT						
IDEA OF INNOVATIVE PROJECT	CODE	NAME				
PROCESS/AREA						
HIGH LEVEL BUDGET	BUDGET ITEM	AMOUNT US\$				
PEOPLE WHO DEVISE THE INNOVATIVE PROJECT						
JUSTIFICATION OF THE PROJECT						
SELECTED OBJECTIVES						
PURPOSE OF THE CURRENT STRATEGIC PLAN	PURPOSE OF THE PROCESS OR AREA TO WHICH THE PROJECT WILL CONTRIBUTE	MANAGEMENT INDICATOR	GOAL	WILL CONTRIBUTE TO THE GOAL? IN WHICH WAY?	HOW MUCH WILL BE THE CONTRIBUTION TO THE GOAL (APPROXIMATELY)?	
NAME AND LAST NAME, AND THE LABOR POSITION OF ONE OF THE PEOPLE WHO DEVISE THE INNOVATIVE PROJECT				NAME AND LAST NAME, AND THE LABOR POSITION OF ONE OF THE PEOPLE WHO DEVISE THE INNOVATIVE PROJECT		
NAME AND LAST NAME, AND THE LABOR POSITION OF ONE OF THE PEOPLE WHO DEVISE THE INNOVATIVE PROJECT				NAME AND LAST NAME, AND THE LABOR POSITION OF ONE OF THE PEOPLE WHO DEVISE THE INNOVATIVE PROJECT		

Table 3

FR-MIM3-002-001 Innovative Project Charter

LOGO OF THE ORGANIZATION	INNOVATIVE PROJECT CHARTER				CODE OF FORM	FR-MIM3-002-001	
	APPROVED BY:				START DATE OF THE USE OF THIS DOCUMENT		
	AREA WHICH APPROVES THE DOCUMENTS OF THE QUALITY MANAGEMENT SYSTEM				DD/MM/YYYY		
INNOVATIVE PROJECT CHARTER							
IDEA OF INNOVATIVE PROJECT	CODE	NAME					
PROCESS / AREA							
HIGH LEVEL BUDGET	BUDGET ITEM		AMOUNT US\$				
PEOPLE WHOM DEVISE THE INNOVATIVE PROJECT							
JUSTIFICATION OF THE PROJECT							
PURPOSE OF THE PROJECT							
SCOPE OF THE PROJECT							
PHASES AND RESULTS OF THE PROJECT							
Nº	PHASE	START DATE	END DATE	RESULT			
1							
2							
3							
4							
5							
6							
PROJECT TEAM							
<<NAME AND LAST NAME OF THE PROJECT LEADER>>		<<NAME AND LAST NAME OF A MEMBER OF THE PROJECT TEAM>>					
<<CARGO O PERTENENCIA A PROCESO O ÁREA>>		<<LABOR POSITION>>					
PROJECT LEADER		<<PROCESS OR AREA>>					
<<NAME AND LAST NAME OF A MEMBER OF THE PROJECT TEAM>>		<<NAME AND LAST NAME OF A MEMBER OF THE PROJECT TEAM>>					
<<LABOR POSITION>>		<<LABOR POSITION>>					
<<PROCESS OR AREA>>		<<PROCESS OR AREA>>					
APPROVED BY:							
<<NAME AND LAST NAME OF THE MANAGER WHO APPROVES THE PROJECT>>		<<NAME AND LAST NAME OF THE SPONSOR OF THE PROJECT>>					
<<LABOR POSITION OF THE MANAGER WHO APPROVES THE PROJECT>>		<<LABOR POSITION OF THE SPONSOR OF THE PROJECT>>					

Table 4

FR-MIM3-003-001 Template of the Project Management Plan – Table of Contents

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8.1.1 TEAM OF THE TECHNICAL AREA.....	10
8.1.2 TEAMS OF OTHER AREAS.....	10
8.1.3 TEAMS OF PROVIDERS.....	11
8.2 PROCESSES FOR MANAGING THE HUMAN RESOURCES.....	11
9. COMMUNICATIONS MANAGEMENT.....	12
10. RISK MANAGEMENT.....	13
11. ACQUISITIONS MANAGEMENT.....	14
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Table 6

FR-MIM3-005-001 Risks Management of the Innovative Project

LOGO OF THE ORGANIZATION		RISK MANAGEMENT OF				CODE OF	FR-MIM3-005-001			
		APPROVED BY:				START DATE OF THE USE OF THIS DOCUMENT				
		AREA WHICH APPROVES THE DOCUMENTS OF THE QUALITY MANAGE				DD/MM/YYYY				
RISK MANAGEMENT OF THE INNOVATIVE PROJECT										
PROJECT		CODE	NAME							
					ACTIONS FOR MITIGATING THE IMPACT OF THE RISKS					
Nº	RISK	DETECTION DATE	CONCRETE ACTIONS	START DATE	FINISH DATE	RESPONSIBLE PERSON	% ADVANCE	COMMENTS		
1										
2										
3										
4										
5										
			<<NAME AND LAST NAME OF THE PROJECT LEADER>>							
			PROJECT LEADER							

Table 7

FR-MIM3-006-001 Financial Evaluation of the Project

LOGO OF THE ORGANIZATION	FINANCIAL EVALUATION OF THE INNOVATIVE PROJECT												CODE OF FORM	FR-MIM3-006-001
	APPROVED BY:												START DATE OF THE USE OF THIS DOCUMENT	
	AREA WHICH APPROVES THE DOCUMENTS OF THE QUALITY MANAGEMENT SYSTEM												DD/MM/YYYY	
FINANCIAL EVALUATION OF THE INNOVATIVE PROJECT														
	Period 0	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6	Period 7	Period 8	Period 9	Period 10	...	Period N	
ADDITIONAL INFLOWS														
Additional Inflows														
Savings														
TOTAL		0	0	0	0	0	0	0	0	0	0	0	0	
ADDITIONAL OUTFLOWS														
Additional Investments														
Hardware Acquisition														
Software Acquisition														
Installation														
Infrastructure														
Furniture and Equipment														
Additional Expenses														
Personnel														
Advertising														
Training														
Support														
Maintenance														
Inactivated Time														
Space and Energy														
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	
NET FLOW	0	0	0	0	0	0	0	0	0	0	0	0	0	
Discount rate	0%	Comments												
NPV (Net Present Value)	0													
APPROVED (Y = Yes, N = No)														
<<NAME AND LAST NAME OF THE PROJECT LEADER>>														
PROJECT LEADER														

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Table 11
FR-MIM3-010-001 Schedule of the Project

LOGO OF THE ORGANIZATION	SCHEDULE OF THE INNOVATIVE PROJECT												CODE OF FORM	FR-MIM3-010-001					
	APPROVED BY:												START DATE OF THE USE OF THIS						
	AREA WHICH APPROVES THE DOCUMENTS OF THE QUALITY												DD/MM/YYYY						
SCHEDULE OF THE INNOVATIVE PROJECT																			
PROJECT	CODE	NAME																	
PHASE / ACTIVITY	Year 1								Year 2										
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PHASE 1: Name of the Phase 1	*																		
STAGE 1.1 Name of the Stage 1.1																			
Activity 1.1.1 Name																			
Task 1.1.1.1 Name																			
Task 1.1.1.2 Name																			
Activity 1.1.2 Name																			
STAGE 1.2 Name of the Stage 1.2																			
Activity 1.2.1 Name																			
Activity 1.2.2 Name																			
...																			
PHASE N: Name of the Phase N																			
STAGE N.1 Name of the Stage N.1																			
Activity N.1.1 Name																			
Activity N.1.2 Name																			
STAGE N.2 Name of the Stage N.2																			
Activity N.2.1 Name																			
Activity N.2.2 Name																			
<div style="border: 1px solid black; width: 100%; height: 100%; margin: 10px auto;"></div>																			
<div style="border: 1px solid black; width: 100%; height: 100%; margin: 10px auto;"></div>																			
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<div style="border: 1px solid black; width: 100%; height: 100%; margin: 10px auto;"></div>																			

* To put a "X" for indicating the execution of the activity. The period would be month, week or day, depending of the

Table 13

FR-MIM3-012-001 Communications Management of the Innovative Project

LOGO OF THE ORGANIZATION	COMMUNICATIONS MANAGEMENT OF THE INNOVATIVE PROJECT		CODE OF FORM	FR-MIM3-012-001	
	APPROVED BY:		START DATE OF THE USE OF THIS DOCUMENT		
	AREA WHICH APPROVES THE DOCUMENTS OF THE QUALITY MANAGEMENT SYSTEM		DD/MM/YYYY		
COMMUNICATIONS					
PROYECTO	COD	NAME			
Nº	STAKE HOLDERS' GROUP	WHAT WILL BE COMMUNICATED?	WHEN OR WITH WHICH FREQUENCY WILL BE COMMUNICATED?	WHAT WILL BE THE MEDIA FOR THE COMMUNICATIONS?	WHERE WILL BE COMMUNICATED?
1					
2					
3					
4					
5					
		<<NAME AND LAST NAME OF THE PROJECT LEADER>>			
		PROJECT LEADER			

Labour Intensity and Skill Gap in the Hospitality Sector: A Study in South India

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Received January 2017; Revised May 2017; Accepted June 2017

Abstract

Hospitality is all about offering warmth to someone who looks for help at a strange or unfriendly place. The hospitality industry has evolved from the basic food and accommodation industry and taken a very important position in almost all businesses. In fact, it has become a huge industry and has driven economies across the globe. The scope of hospitality/ service industry today is far more than one could have ever imagined a few years back. The study investigates the trends, constraints, and opportunities faced by the hospitality sector in selected districts of the three southern states of India, namely Karnataka, Kerala, and Tamil Nadu, in light of the enormous changes taking place in the economy. Principal Component analysis, OLS regression, and non-parametric tests are applied to analyze the conditions and growth of the hospitality sector. The paper explores in detail these key trends, which impact both the hospitality industry as well as related sectors which make viable the travel experience. The study contributes to the discussion on the importance of the skill development and articulates the factors influencing the skill gap in the hospitality sector in the Indian context.

Keywords: Hospitality, tourism, skill gap.

Reference to this paper should be made as follows: Suprabha, K. R., Prasad, K., and Shridev. (2017). Labour Intensity and Skill Gap in Hospitality Sector: A Study in South India. *Public Enterprise*, 23(1), 84-110.

<https://doi.org/10.21571/pehyj.2017.2304>

Introduction

Tourism and hospitality are regarded as the fastest growing industry in the world, with India having a significant potential for developing the sector. The hospitality industry is one of the world's largest employers, and one of every six new businesses established in the world is a hospitality enterprise (Zorin, 2001). Hospitality is unquestionably one critical key success factor for service firms in today's new, experience-based economy (M.Ariffin, Maghzi, & Aziz, 2011). In general, the hospitality sector is a wide-ranging classification of fields within the service industry which includes lodging, restaurants, event planning, theme parks, transportation, cruise line, and additional fields within the tourism industry (Weilbaker & Crocker, 2001). The companies or organizations which provide food and/or drink and/or accommodation to people who are away from home are referred to as the hospitality industry (Chathoth & Olsen, 2002). The concept of 'hospitality business' started when people started traveling away on business, and they needed a place away from home which could cater to all their needs. Today, hospitality has evolved from the basic food and accommodation industry and has taken a very important position in almost all businesses. In fact, it has become a huge industry and has driven economies across the globe. The scope of hospitality/ service industry today is far more than one could have ever imagined a few years back. The growth of the industry depends on the availability of the skilled manpower.

This study investigates the labour intensity and the skill gaps in the hospitality sector in South India. Further, we examine the factors which could explain the skill gap. The study contributes to the discussion on the importance of the skill development and articulates skill gaps at various levels of work. The paper also studies the relationship between skill gap articulation, improvement in infrastructure, growth in wages, age, leverage, investment, total employee strength, and skill gap.

Literature Review

The hospitality industry is one of the world's largest employers, and one of every six new businesses established in the world is a hospitality enterprise (Zorin, 2001). According to the World Travel & Tourism Council (WTTC) and the International Labor Office (ILO), there is a worldwide consensus that employment generated by the tourism/hospitality industry can be substantial in many national economies, contributing to their economic growth and providing employment and income to people (Netter, 1998).

The human resources are one of the most important components for enhancing the productivity, especially in the tourism and hospitality sector. Productivity in the tourism and hospitality industry can be increased by studying the roles of

changes in physical capital, human capital, innovation, and the competitive environment. Comprehensive results are obtained by using questionnaire-based interviews, business survey data analysis, and computable general equilibrium modeling. The results demonstrate the positive contribution that each of the productivity drivers can make to improving efficiency and welfare, notably increases in human capital and innovation (Blake, Sinclair, & Soria, 2006).

They also indicate that a combined strategy incorporating all of the drivers is more effective than independently formulated policies. Georgiadis and Pitelis (2008) also found the empirical evidence of the relationship between human resources practices and the effectiveness of a firm to capitalize on investment in knowledge as measured by the returns to innovation and business development expenditure. Their findings suggest that businesses that receive support in the area of staff training and development, in HR planning and in staff recruitment and retention generate 100 per cent, 86 percent, and 134 percent more revenue per unit of money spent on innovation and business development compared to firms that do not receive such services. Blake, Sinclair, and Soria stated in 2006 that government organizations could collaborate to assist productivity increases, with specifically tailored measures for small firms.

Nature of Work and Skills in Hospitality

The job of hospitality and the skills that it requires display enormous diversity. In a sense, it comprises a very wide variety of jobs, the extent depending on the definition of the sector that is employed. Earlier research focused on hospitality work which was confined to areas that provide primarily food and beverage (Gabriel, 1988; Mars & Nicod, 1984) and, to a small extent, accommodation. This was also covered in the studies by Guerrier and Deery (1998) and Wood (1997). Research into major areas of hospitality work, particularly those that have emerged with the expansion of services and functions in the area (front desk, leisure, entertainment, and reservations call centers) is much more poorly served, and this study draws on a limited range of work in these areas. The present area includes functions and tasks that exhibit considerable cross-over with work that falls out with normal definitions of hospitality in food and drinks manufacture, office administration, IT systems management, and specialist areas of sports and leisure. Indeed, it is fair to say that although there is long-standing debate as to whether the hospitality industry is 'unique' (Lashley & Morrison, 2001; Mullins, 1981), there is little doubt that there is little that is unique about hospitality skills. Most of the skills that are employed within the sector also have relevance and application in other sectors of the economy. Those employed in areas where there is considerable overlap between skills and hospitality, such as the areas listed above, may well see themselves in terms of their generic skills area, rather than as part of the hospitality labour market. Some of these skills have been subject to separate assessment (Ecotec, 2001) in a manner that has value and cross-over

implications for the hospitality sector. The characteristics and the organization of the hospitality industry are subject to on-going re-structuring and evolutionary change.

The skills profile of hospitality, in turn, is influenced by the labour market that is available to it, both in direct terms and via educational and training establishments. The meagre labour market characteristics in hospitality enforce plunging forces on the expectations of skills that employers have on their staff and thereby influences the nature and level of training that the educational system delivers. There is an evident cycle of down-skilling, not so much in response to the actual demands of hospitality work or of consumer expectations of what it can deliver, but as a result of the perceptions of potential employees and the expectations that employers have of them. Hospitality work is commonly considered in both the popular press and in research-based academic sources as dominated by a low skills profile (Wood, 1997; Shaw & Williams, 2001). Bradley, Erickson, Stephenson, and Williams (2000) apply this epithet to the wider service or new economy in questioning the assumptions about a skills revolution in Britain, noting that “jobs commonly retain a low-skill character, especially in the fastest-growing sectors”.

Athey (2004) maintained there is a contest for human capital, and when “the knowledge and skills of critical talent become scarce, recruiting wars erupt”. He recommended that organizations identify the strategies, skills, and capabilities crucial to their current and future success, as well as the emerging workforce trends that will impact operations. The Lefever and Withiam (1998) study found that workforce recruitment and retention is the number one concern of hospitality professionals. Sourcing skilled labor for the hospitality industry is not only a domestic problem. The International Society of Hospitality Consultants listed a shrinking labor force as the number one human resource challenge facing the hospitality industry in 2006, and skills and labor shortage as the number one issue facing the hospitality industry in 2007 (Coy, 2006).

Skill Characteristics Expected by Employers in the Hospitality Sector

Skill is the ability to do something well (Soanes, Hawker, & Elliot, 2006). Mish (1997) explained it as a capability and aptitude acquired through purposeful, orderly and sustained effort to smoothly and adaptively carry out complex activities or job functions involving ideas (cognitive skills), things (technical skills), and/or people (interpersonal skills). Skills review analyses developed in about the 1980s when employers persuaded the government to challenge the autonomy of the training sector by reviewing and evaluating the traditional curricula because the employers felt that the curricula were not aligned to their needs (Bennett, Dunne, & Carre, 2000; Hoddinott, 2004). Further, Diplari and Dimou (2010) explained that

employees in tourism felt that the level of skills and knowledge offered in tertiary education was unsatisfactory and were not in line with their needs. They further stated that the hospitality and tourism industry requires specific job-related skills. In addition, that employers require hospitality staff to be quick learners, flexible, adaptable, and transformable (Bennett, 2010; Hjalager, 2003). Oliver *et al.* (1997) and Bennett *et al.* (2000) stated that employees need to demonstrate initiative, possess the ability to work well with others, solve problems routinely, and apply technology effectively. Bailey (1997) and Sinclair (1997) maintained that employees also need to be able to work independently with minimum supervision and to be creative. According to Bailey (1997) and Bennett *et al.* (2000), it is essential for employees to have acquired a broader knowledge and conceptual understanding of what their jobs entail for them to fit easily into the workplace culture. They further need to be able to acquire, organize, and interpret information.

Further, a study was conducted by Saayman and Geldenhuys (2003) among travel agents, tour operators, and tour guides and recognized the following as important in this field of study: computer skills, arithmetic skills, telephone skills, business writing, listening skills, language skills, negotiation skills, presentation skills, leadership and social skills, organizational skills, interpersonal skills, research skills, ethical and social responsibility skills, and cultural sensitivity skills. Some employers in tourism view communication skills as the top priority, followed by computer skills. Work experience with language skills was considered to be the least important. Employers generally rated transferable people skills above tourism knowledge when these were compared, and tourism knowledge was viewed as merely adding value.

Certain companies considered experience to be more important than a degree-level qualification (Erasmus & Breier, 2009; Peacock & Ladkin, 2002). Besides the above, Jameson and Holden (2000) argued that graduates are regarded by many small and medium enterprise (SME) employers as being impractical, reluctant to get their hands dirty, slow to become productive and inclined to hold a poor view of what employment in an SME should be like.

Employers are of the opinion that the knowledge, skills, competencies, and values of new graduates may not be coordinated with the expectations of employers in this industry (Diplari & Dimou, 2010; Erasmus & Breier, 2009; Griesel & Parker, 2009). Organizations struggle to find the quality and relevance of learners' prior training useful, regarding it as either 'too generic' or 'far removed' from the workplace realities (Swanson & Holton, 2009). In order to meet the changing requirements of companies, tertiary institutions must design programmes that venture beyond content, thereby encouraging independent learning strategies whilst focusing on the ability to think systematically and redefine problems (Education, 2000).

Schuurman (2004) observes that employers are not offered an opportunity to express their actual needs. He further stated that the employers should be engaged in all the progressions, as they could provide the most pertinent information on needs of training for tourism labour market and ultimately also be the ones to address the major inadequacies of current training programmes in the industry.

Skill Gap

Employability and development of skill are major concerns for governments and organizations in all sectors. Countries and organizations endure the high cost of either scarcities or employees deficient in the necessary skills for critical jobs. A potential global shortage of around 38 million of high skilled and 45 million of middle-skilled employees, is expected in 2020 as per McKinsey Global Institute report specified in (Dobbs et al., 2012). Therefore, the importance of developing and nurturing the required skills by preparing highly qualified calibers with qualifications that match knowledge- based and high technology labor market is unquestionable at international, national, and institutional levels.

The hospitality industry, in common with many other industries, has shown growing levels of competition and complexity over recent decades (Kandampully & Suhartanto, 2000). As people spend more time to improve their leisure lives, firms in the hospitality industry are now immersed in a highly competitive environment and need a more creative workforce to provide high quality services (Claver, Tari, & Pereira, 2006). Skills shortages result when there are too few people with the right set of skills to fill available positions (Retail, 2004). There have been several definitions of skills shortages or gaps in the literature. Firstly, skills shortages are defined as deficiencies within the labour pool, which create problems in recruiting new staff “caused specifically by a shortage of individuals with the required skills in the accessible labour market” (Frognier, 2002). There are also skills gaps, which are deficiencies in the skills which employees need to carry out their existing tasks (Green, 1998). Both these cases represent shortages in skills which are currently required and which may not be possessed by the existing workforce. In addition, there are skills not currently possessed by the workforce, but which an employer believes will be necessary for future if the business is to develop (Retail, 2004). These three types of skills shortages are all likely to be relevant to retail sector employment and skills issues.

The analysis of skill shortages and hard-to-fill vacancies is especially relevant in the hospitality sector (Marchante, Ortega, & Pagán, 2006). According to Mayhew and Keep (1999), the hospitality sector is characterized by the presence of low wages, unsociable and long hours and family unfriendly shift patterns, rare incidences of equal opportunities and male domination of higher and better paid work. Also, there are a poor or non-existent career structures, informal recruitment practices, high levels of labour turnover, low presence of trade unions and difficulties in recruitment and retention (Nankervis & Debrah, 1995).

Although issues regarding labour market trends and labour turnover have been widely examined in the hospitality sector, the literature on skill shortages is not very abundant. Ladkin (1999) in his study argued that one of the developing key findings in the analysis of labour market trends in the hospitality industry is a shortage of labour. However, a review of the studies on the shortage of labour shows that, in general, it is difficult to design a suitable methodology to measure and analyze the data related to skill shortages.

Workplace efficiency has become a priority for employers across the globe due to the global recession and the cost cutting measures that have been employed as a result in the recent past. Completing a skills gap analysis allows organizations to stay on top of employee development, channel their resources effectively and adapt to future skills demands. Mandabach, Vanleeuwen, & Bloomquist (2001) argued that technology is a key component of any hospitality curriculum and that the work experience portion of the curriculum is most closely correlated with increased proficiency in industry-specific software. In a study of Taiwanese hospitality industry professionals, communication skills and adaptation to environmental changes were identified as the most important competencies for career success, whereas operational knowledge and analytical techniques, problem identification, management of employees, and management of job competencies were not significantly related to career success (Lin, 2002).

Employers can employ a variety of approaches following their skills gap analysis to facilitate appropriate employee development and training plans. For example, relevant on the job training or continuing professional development to membership of professional bodies and attainment of career related qualifications could be incorporated. High-season business demands in the tourism and hospitality industry, such as time pressure, high employee turnover, rapid money turnover – especially in small businesses – and the inability to assess the benefit of training and the expertise needed to provide training, have been identified as hindering and discouraging the provision of ongoing employee training in hospitality industry (Baum, Amoah, & Spivack, 1997; D’Annunzio-Green, Maxwell, & Watson, 2004). Nevertheless, as per the studies by Haven-Tang & Jones (2006) and Lucas (2004), some of these constraints in the industry are generally accepted as unavoidable and common. In addition, the tourism industry is dominated by small businesses (Baum, 1999; Lucas, 2004; Peacock & Ladkin, 2002) with some of the owner-manager positions in these small businesses being filled by expatriates, the majority of whom lack tourism knowledge and management skills and have never undergone formal tourism training. Globally, the industry faces skills shortages in key operational, technical, and managerial areas, the extent varying between developed and developing countries.

Skill Gap Analysis

A *skill gap analysis* is a methodical review of the skills possessed by individuals in a company (Clark, 2012). The procedure involved in performing skill gap analysis is to point out all the skills essential for an individual to carry out their job well (Duggan, 2013). Employers should then be able to classify the critical and non-critical skills required to attain a higher standard of work by comparing the list of required skills with the actual skills possessed by the employee (QFinance, 2009).

The results of the skill gap analysis can be used to develop training needs and type of training, support performance appraisals or justify pay reviews (Antonucci & D'Ovidio, 2012). A skills gap analysis can really benefit by providing a critical overview of the workforce allowing managers to decide if their employees have the necessary skills to meet organizational objectives (QFinance, 2009). If employees do not possess the required skills, an organization can use the skills gap analysis to prioritize the type of training so that they are tailored to specific job roles, as opposed to generic training days that are not suitable for all the individuals participating. Research by Mudor (2011) indicates that providing appropriate opportunities for training that link business and individual skills needs may influence workers to stay with an employer for longer, maximizing the benefits of increased employee productivity due to a higher level of skills when considered against the original cost of training. Further long-term savings are made as employees feel valued and increasingly willing to remain with their employer, reducing the costs associated with staff turnover (Skills, 2012). It is further required to identify staff members possessing knowledge in a particular area and workforce lacking certain skills facilitating the mentoring process within teams, as well (QFinance, 2009). Skill gap analysis can also support recruitment practices as employers can select candidates with preferred skills required by a particular department. Traditionally, a skill gap analysis is undertaken using paper-based assessments and supporting interviews; however, technological advancements, such as skill management software, are allowing large companies to administer a skill gap analysis without using a significant proportion of human resources (Antonucci & D'Ovidio, 2012).

If employees are more willing to remain with a company and progress their careers, then they become part of the organization's talent pipeline facilitating effective succession planning and contributing to the success of an organization's overall talent management strategy.

Objectives of the Study

The study investigates the trends, constraints, and opportunities faced by the hospitality sector in selected districts of the three southern states of India, namely

Karnataka, Kerala, and Tamil Nadu. The main purpose of the study is to find out the intensity of labor and skill gap in the hospitality sector.

Methodology

The study investigates the intensity of labour and skill gap in the hospitality sector in selected districts of the three southern states of South India, namely Karnataka, Kerala, and Tamil Nadu. The study is an empirical one, using both primary and secondary data. The analysis of secondary data involved a comprehensive literature review of published and semi-published sources, including, journals, magazines and reports of various committees, and data published by NABARD and other relevant agencies in regard to the rural service sector at the macro level. The micro level empirical part of the research study was based on a field survey confined to the hospitality sector in Karnataka, Kerala, and Tamil Nadu. The study was carried out with a structured questionnaire applied to hospitality service providers of undivided Dakshina Kannada and Uttara Kannada district of Karnataka state; Wayanad and Alappuzha district of Kerala state; Madurai and Kanyakumari district of Tamil Nadu.

For the purpose of the study, the sample consisted of 50 respondents each from each of the selected districts. The sample size of 50 was decided based on the time and cost involved. Hence, 306 hospitality service providers were interviewed. The purpose of the exercise is to have a representative sampling. Thus, the list of the rural service sector would be collected from the ZillaPanchayat / municipality of the selected districts. However, based on the field conditions, the study adopted purposive/snowball sampling. A cross-sectional analysis of the field data, state-wise, is carried out to draw inferences relating to the objectives set in the study, with particular emphasis on employment generation, labour intensity, economic – empowerment, and the role played by various agencies in supporting the efforts of these service providers. The sub-sectors of the hospitality sector include; 1. Boarding and lodging, 2. Restaurants/Food and Beverage, 3. Travel agencies, 4. Tour guides/information providers, 5. Activities such as scuba diving, boat house, etc., and 6. Home stay.

Data Analysis

This research is designed as a cross-sectional data analysis to examine the regional differences and impediments in the growth of the hospitality sector. In order to carry out the cross-sectional analysis, the field level survey data was collected from a sample of 306 hospitality service providers in the selected districts.

Profile of the Respondents

Table 1 shows the industry-wise and location-wise breakup of the surveyed firms in all the six districts, respectively. Overall, lodges and restaurants (food and beverage) are high in number compared to all other hospitality service providers in each of the district studied. Further, the number of house boats were more in the Alappuzha district, when compared to other hospitality service providers in that region, and the proportion of home stays were more in the Wayanad district of Kerala state. Recreation activities were seen in the Uttara Kannada and Dakshina Kannada district. To elaborate, adventure activities were observed in Dandeli taluk of Uttara Kannada district and water sports activities were observed in two firms in the undivided Dakshina Kannada district.

Table 1

District – Wise Classification of Respondents based on the Service Provided

Service	Kerala		Tamil Nadu		Karnataka		Total
	Alappuzha	Wayanad	Kanyakumari	Madurai	Dakshina Kannada	Uttara Kannada	
Adventure	0	0	0	0	2	8	10
Food and Beverage	5	15	13	9	15	15	72
Home Stay	7	9	0	1	0	7	24
House Boat	34	0	0	0	0	-	34
Lodging	5	19	32	39	29	23	147
Resort	0	4	0	0	0	2	6
Tour Operators /Travel Agency	0	3	5	1	4	-	13
Total	51	50	50	50	50	55	306

Note. Source: Field Data Survey.

Capital Usage

The sample size is well spread across the firms with the different capital requirement. A large number of firms surveyed had an investment of Rs. 10 lakhs to Rs. 50 lakhs. This could be observed in Table 2.

Table 2
District – Wise Classification of Respondents, based on the Capital Investment

Capital Invested	Alappuzha	Wayanad	Kanyakumari	Madurai	Dakshina Kannada	Uttara Kannada	Total	
							Number	Percent
Below 100000	0	1	0	2	1	4	8	2.6
100000-1000000	8	7	14	11	10	19	69	22.5
1000000-2500000	8	15	17	18	20	27	105	34.3
2500000-5000000	17	13	10	10	12	4	66	21.7
5000000-7500000	8	5	6	7	2	1	29	9.5
7500000-1 crore	9	1	2	2	1	0	15	4.9
Above 1 crore	1	8	1		4	0	14	4.6
Total	51	50	50	50	50	55	306	100

Note. Source: Field Data Survey.

Labour Intensity

Table 3 depicts the district-wise data on a total number of the workforce employed and the number of vacant positions. The trend in the number of the workforce employed is almost similar (ranging from 16 to 20%) in almost all the districts surveyed, except in Alappuzha, where it is 10.84%.

Table 3
District-Wise Classification of Workforce Employed and Vacant Positions in the Hospitality Sector

District	Employed						Vacant Position		
	Male		Female		Total		Male	Female	Total
	No.	Percent	No.	Percent	No.	Percent			
Madurai	392	14.51	87	3.22	479	17.73	145	64	209
Kanyakumari	390	14.43	79	2.92	469	17.36	82	20	102
Alappuzha	273	10.10	20	0.74	293	10.84	23	2	25
Wayanad	386	14.29	96	3.55	482	17.84	312	97	409
Uttara Kannada	342	12.66	108	4.00	450	16.65	41	7	48
Dakshina Kannada	437	16.17	92	3.40	529	19.58	4	3	7
Total	2220	82.16	482	17.84	2702	100.00	607	193	800

Note. Source: Field Data Survey.

It could be observed here that women constitute hardly 17.84% in the total of 306 firms surveyed across the districts. Barriers to women entering employment in the sector were highlighted consistently, with the lowest percentage of female staff recruited across the sample surveyed. The low numbers of female staff were attributed to social stigma and misconceptions which surround the tourism

and hospitality industry. Women in the sector are mainly employed in low-skilled jobs, especially as cleaning staff. Further, 800 vacant positions exist in the firms surveyed. Generally, owners were men. Among the 306 firms, two hotels only had women owners.

According to Table 4, the mean number of vacancies in the last 12 months in the 306 firms surveyed was 3.85. From the total number of firms, 19.48% reported vacancy in the last 12 months, and the percentage of such vacancies over the total number of employees was 22.84%. The mean number of hard-to-fill vacancies in the last 12 months was 3.67. The percentage of firms having at least one difficult-to-fill vacancy was 29.09%. The hard-to-fill vacancies as a percentage of the total number of employees and the total number of vacancies were 13.85% and 39.01%, respectively.

Table 4
Incidence of Total Vacancies and Hard-to-Fill Vacancies

Total vacancies	Mean number of vacancies	3.85
	% of firms reporting vacancies	19.48
	Vacancies as % of employment	22.84
Hard-to-fill vacancies	Mean number of hard-to-fill vacancies	3.67
	% of firms reporting hard-to-fill vacancies	29.09
	Hard-to-fill vacancies as % of employment	13.85
	Hard-to-fill vacancies as % of vacancies	39.01

Note. Source: Field Survey Data.

Around 19.5% of the firms surveyed reported vacancies in the workforce and around 29% stated that there are hard-to-fill vacancies, also. Hard-to-fill vacancies generally exist in the area of cleaning staff and skilled chefs. It is hard to find cleaning staff, particularly for the food and beverage firms. Further, it is difficult to find a skilled chef who can cook all kinds of dishes, other than the local dishes. Such positions are often filled with applicants who cannot find a job elsewhere. It is difficult to recruit members of staff with the appropriate skills, but also with a sense of flexibility, willingness, and presentation. Licensed *srank*¹ and motor mechanics are further hard-to-fill vacancies in house boats, as reported by the respondents. Based on the survey, it was found that the major deterrent in hiring more people are long working hours, migration of work force to well-developed cities in search of a better job, and difficult-to-find trustworthy employees. It was also observed that some workers find jobs in the hospitality sector as an alternate source of employment during the off season in agriculture.

¹ *Shrank* is the designation of the drivers who operate house boats; this is the commonly used term in the Kerala State of India.

Demographics

Figure 1 illustrates the existing qualification levels obtained from the supplied workforce information.

Note. Source: Field Survey Data.

Figure. 1. Education level of respondents' workforce.

67.36% of the workforce employed had primary education, while around 8% had no literacy. 1% of the respondents were post-graduates, and 1.48% of the sample had some industry-related qualification. It was also observed during the survey that, once the workforce gains some amount of experience, they tend to switch over to better hotels/ restaurants for a higher pay. This was a common problem in most of the sample surveyed. Such labour turnover was more in semi-skilled jobs.

Of the 306 firms surveyed, 209 (67.8%) hired workers based on prior training or knowledge. They had the basic knowledge as to what is the expected work to be done. All the house boat owners hired workers based on prior knowledge of the work. It is also evident from the below table that more than 50 percent of the hospitality service providers employed the workers based on prior training or prior knowledge about the basic work they are expected to do. This can be observed in Figure 2.

Note. Source: Field Survey Data.

Figure 2. Classification of service providers based on worker's prior training.

Further, an attempt was made to know the categories where a shortage of labor was found among the hospitality service providers. Figure 3 summarizes the shortage of labor in the respective firms. Based on the response of the various service providers, it was observed that house boat and food and beverage firms had a major shortage in skilled staff. Skilled staff in food and beverage firms comprises of supervisors and chef workers, and *sranks* were the skilled workers in house boats. The industry had limited number of licensed *sranks*.

Note. Source: Field Survey Data.

Figure 3. Shortage of labor (%).

Skill Gap

An attempt was made to identify the skill gaps among the workers in the surveyed units. The opinion of the management was taken for this purpose. Figures 4 through 10 narrate the skill gap among the operational and supervisory level employees' observed skills. Overall, improper oral communication was observed as a major skill gap in almost all the sub-sectors, irrespective of the level of occupation. With respect to the home stays, lack of technology related skill in terms of handling emails and websites were observed to be the major skill gap.

In addition, food and beverage firms also had an issue of cuisine with improper knowledge on various dishes other than the local ones. The surveyed districts are tourist spots having tourists from places all over the country. Hence, language and communication of the front-end servicing staff play a pivotal role. It is also worth noting that lifesaving rescue skills of the guest are an important skill which is indeed lacking among all the employees in the house boats surveyed.

To add, the drivers and the front-end staff of the travel agencies lack communication skills. Most of them had limited adherence to driving rules and regulations and also had inadequate knowledge of safety norms.

Note. Source: Field Survey Data.

Figure 4. Skill gap reported for the operational level in lodging.

Note. Source: Field Survey Data.

Figure 5. Skill gap reported for the supervisory level in lodging.

Note. Source: Field Survey Data.

Figure 6. Skill gap reported for the operational level in the food and beverage sector.

Note. Source: Field Survey Data.

Figure 7. Skill gap reported for the supervisory level in the food and beverage sector.

Note. Source: Field Survey Data.

Figure 8. Skill gap reported for the operational level in home stays.

Note. Source: Field Survey Data.

Figure 9. Skill gap reported for the supervisory level in home stays.

Note. Source: Field Survey Data.

Figure 10. Skill gap reported for the operational level in house boats.

An attempt was made further to analyze what are the factors that can be used to manage the skill gap. A chi-square test was conducted in this regard. As far as managing the skill gaps are concerned, salary is a highly important factor. Beside the industry level effort (21%), the inhouse training also helps to reduce the skill gap. During the discussion with the entrepreneurs, it was found that most of the labours would not possess any skills required for the job. It is due to the fact that the in-house training programs conducted over a period of time makes them possess the skills required. Therefore, in-house training plays an important role in bridging the skill gap. Further, based on Table 5, it is evident that the chi-square significance value is 0.000, which is less than 0.05.

Table 5
Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	983.286(a)	28	0.000
Likelihood Ratio	1061.770	28	0.000
Fisher's Exact Test	.(b)		
N of Valid Cases	2440		

Note.

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 52.88.

b. Cannot be computed because there is insufficient memory.

OLS Regression Analysis

An attempt is made in this section to determine the relative importance of various determinant factors for growth of the hospitality sector by using OLS regression analysis. The model given below is used to test the articulation of skill gap, the influence of infrastructure development and growth in wages on the sales growth while controlling investment, total employees, and age of the service providers. The regression equation is:

$$YGS = \alpha + \beta_1SGAP + \beta_2(INF) + \beta_3GWAG + \beta_4AGE + \beta_5DER + \beta_4INVST + \beta_4EMP \quad (1)$$

where GS is growth in sales; SGAP is an articulation of skill gap; INF is an improvement in infrastructure; GWAG is growth rate in wages; AGE is the age of the firm; DER is debt equity ratio; INVST is investment; and EMP is the number of employees employed.

Articulation of skill gap was a dummy variable coded as 1 if the firm could articulate the skill gap and 0, otherwise. Improvement in infrastructure is computed as the aggregate of responses given by the firms with respect to the improvement required in infrastructure. A Likert scale was used to measure the improvement required, with 1 representing high improvement required and 5 representing least improvement required. In other words, the higher the number,

the lesser improvement required and vice versa. Growth in wages is the percentage growth rate increase in the wages over the last three years. Age was measured as the number of years the business has completed. Debt equity ratio is computed as the proportion of debt to total equity. Investment is a total investment made by the firm in rupees. Total employees are the absolute value derived, *i.e.*, the total male and female workers who are already employed in the firms.

Further, debt equity ratios, the age of the firm, investment, infrastructure, total employees and growth in wages were standardized due to the different measurement scales. Table 6 summarizes the results of the OLS regression for the sample surveyed. The result suggests that articulation of skill gap is highly significant. It means the growth in the top line is largely influenced by the articulation of skill gap. The positive relationship between the growth and skill gap articulation could be observed from the above data. The firms who could articulate the skill gap were able to achieve better growth compared to that of firms unable to articulate. Therefore, it is imperative that the articulation of skill gap is one of the important skills to be focused on. The fundamental reason is that if the management could articulate the skill gap, they could also assess the type of training to be provided and thus in turn efficiency would be improved and this could be reflected in sales.

Table 6
OLS Regression Summary for the Sample Surveyed

Particulars	Coefficient	Std. Error	t-ratio	p-value	Sig.
Const	-0.380	0.088	-4.390	0.00002	***
Skill Gap Articulation	0.610	0.112	5.450	<0.00001	***
Improvement in Infrastructure	-0.042	0.055	-0.780	0.43867	
Growth in Wages	0.096	0.052	1.845	0.06597	*
Age	-0.170	0.055	-3.190	0.00156	***
Debt Equity Ratio	-0.110	0.053	-2.140	0.03310	**
Investment	0.214	0.058	3.702	0.00025	***
Total Employees	-0.158	0.058	-2.740	0.00654	***
F (7,300): 9.835					
Adjusted R-squared: 0.16					

Note. * P<0.10, ** P<0.05, *** P.

Improvement in infrastructure negatively influenced the growth. However, the relationship is not statistically significant. It could be understood that tourists visit the spots irrespective of the infrastructure development. Irrespective of the minimal infrastructure development taken place in this region, there is a spurt in tourism. Counter intuitively the growth in wages did not impact the growth negatively. We see the positive relationship between wage rate growth and growth in sales. At least empirically we do not find that the increase in the wage rate is hindering the growth. It is also important to note that with the increase in the inflation in the economy we see wage rate going up and correspondingly the prices also shoot up.

Discussion

Labour Intensity and Skill Gap

Currently, the hospitality sector in India is viewed as a second/ alternative choice due to limited opportunities for progression, and the seasonal approach to work. This is partly because it is characterised by large numbers of low skilled opportunities. As such, developing defined opportunities for a career progression is an important factor in encouraging people to view hospitality as a viable career option. This includes focusing on carving out clear career paths for staff entering the organisation at the entry level. This is important because one of the reasons for the high attrition rates across the sector is the fact that barriers to entry are low. Individuals can enter into the industry relatively easily but also often for a specific short-term need creating a transient workforce. It is, therefore, important for organisations to be able to integrate progression into training and employment.

Vacancy statistics: Vacancy statistics can be an indicator of skill shortage and labour demand. Strong growth in the number of vacancies may indicate demand for skills in a particular industry and large numbers of unfilled vacancies can point to a skill shortage. As much as 22.84% of the total employment were found to be vacant in the sample surveyed.

Limited availability of local labour for minimally skilled jobs: A major limitation faced by the hospitality sector is the local labour constraints. The firms are increasingly relying on migrant labour from other states who are more willing to take up such jobs since the wages are attractive compared to similar jobs in their home states.

Skills that Need Improvement

As much as 60.3% of the employers report the existence of skills gaps, and many say that their staff do not have the necessary customer service and management and communication skills. In addition, these workers (98%) lack industry-related qualification. The present skills which they possess are derived from their past services / practices in the industry.

Among the array of possibilities for skills improvement (as suggested by the survey's questionnaires), communication skill was considered very much necessary by more than 50% of the employers. Job-specific tasks, management skills, and accounting skills were considered necessary and was lacking among the staff of lodging and food and beverage firms. To substantiate with an example, based on the survey findings, the majority of house boat workers lack fire safety skills, rescue skills, and communication skills.

The present fear with the management is that if their employees are trained, they will shift to better jobs, which are again a problem for the management. Based on the field survey and observations, an attempt was made in Table 7 to summarize, overall, the list of skills that are needed to be improved among the hospitality staff.

Table 7
The Skills That Need Improvement

Level	Skill Gap
Restaurants and Hotels/Resorts – Management and Proprietors	Limited Management Skills Limited Accounting, Tax, Banking, and Business Knowledge Limited Computer Literacy
Restaurant and Hotels/Resorts – Customer-facing Staff	Lack of English and Communication Skills Low Customer Relationship Management Low Customer Service Levels
Restaurants and Hotels/Resorts – Kitchen Staff	Limited Knowledge of Variety Cuisines Lack of Adherence to Hygiene Standards Inadequate Communication Skills
Drivers and Other Staff	Limited Adherence to Driving Rules and Regulations Inadequate Knowledge of Safety Norms
House Boat Crews	Lack of Rescue Skills Lack of Technical Skills Inadequate Communication Skills Behavior with Guests
Staff in Recreation Activities	Lack of Emergency, Lifesaving Skills. Inadequate Communication Skills. Inadequate Knowledge of Handling Recreation Equipment Inadequate Communication Skills.
Tour Guides	Limited Historical Knowledge/ Significance of Tourist Locations Lack of Organizing Ability and Soft Skills

Conclusions

The study primarily analyses the human resource intensity and skill gap in the hospitality industry and tries to bridge the gap to attain self-sufficiency. The Central Government has initiated several innovative initiatives to rejuvenate the rich cultural heritage that India possesses. India has vast scope to encash this opportunity. To facilitate this programme, the Government has set up various training and educational programs to create awareness so that people tap the enormous potential that India has.

The Ministry of Tourism has also formulated schemes for Financial Assistance to IHMs, FCIs, IITM, ITIs, Polytechnics, Institutes, Vocational Schools, and so on, for the setting up and upgradation of Institutes of Hotel Management & Catering Technology & Applied Nutrition (IHMs), FoodCraft Institutes (FCIs) in the country. The Government/Ministry of Tourism has taken several initiatives to build skills in the tourism sector.

India has the potential to become the number one tourist destination in the Asia-Pacific region, with the demand growing at 10.1% per annum as per the data released by WTTC. Further, India has the second largest population in the world, estimated at 1.4 billion. By 2016, its population was expected to be bigger than the populations of the US, Europe, Russia, Australia, Japan, and Canada combined. The global population is evolving, and the tourists' pockets of disposable income available for travel are shifting. Affluent baby boomers in the western world are moving into retirement, living longer, and becoming more interested in travel experiences. The middle classes in emerging markets are expanding. Most of the new entrants will come from China and India. Care should be taken that products and services are targeted to the attitude of 'agelessness' and interest in experimental travel shown by the boomers, appealing to the thin sense of adventure, independent spirit and desire to explore off the beaten tourist track.

The value of the brand to the consumers, the growth in emerging markets, the importance of consumers facing technology and the sourcing development and retention of human capital will be the key to sustained growth. This paper aimed to explore in detail these key trends, which impact both the hospitality industry and the related sectors, which makes the travel experience viable.

The findings of the present study are based on the sample of hospitality firms in South India. Further research may compare the skill gaps in hospitality sectors in other regions, such as North India, Eastern India, and the Western part of India.

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Authors Note

The authors would like to thank the National Bank for Agriculture and Rural Development (NABARD) for funding this research project.

The authors are also thankful to the two anonymous reviewers for useful suggestions made on the previous version of this manuscript.

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Service Quality and Innovation in the Public Sector: A Human Values-Based Spiritual Framework

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Received December 2016; Revised May 2017; Accepted June 2017

Abstract

The public sector, being the world's largest service provider has the potential to improve the welfare of millions, if it focussed on service quality and innovation. In spite of various drivers and enablers towards better service, the public sector is seemingly tied down by several barriers. This paper studies the drivers, barriers, and enablers of the service quality and innovation of the public sector from a human values-based spiritual perspective. The paper uses the philosophy and teachings of Bhagavan Sri Sathya Sai Baba, a world spiritual leader, to understand the issues involved. The paper then develops a framework for service quality and innovation by integrating all the variables into a cohesive framework. The paper shows that the human values-based spiritual perspective can provide sustainable solutions for improving the service quality and innovation of the public sector, so that it can regain its position as a pre-eminent solutions provider.

Keywords: Public sector, spirituality, human values, service quality, innovation.

Reference to this paper should be made as follows: Sivakumar, N. (2017). Service Quality and Innovation in the Public Sector: A Human Values-Based Spiritual Framework. *Public Enterprise*, 23 (1), 111-130.

<https://doi.org/10.21571/pehyj.2017.2301.05>

Introduction

The public sector is, collectively, the world's largest service provider. Any incremental improvement in public services positively impacts millions of people (PWC, 2014). Being a large economic entity, the public sector plays an important role in the world economy. The importance of the public sector can be understood from the perspective of the objectives it is expected to achieve in a huge emerging economy, such as India, which include promoting rapid economic development through creation and expansion of infrastructure, generating financial resources for

development, advancing redistribution of income and wealth, creating employment opportunities, promoting balanced regional growth, encouraging the development of small-scale and ancillary industries, and promoting exports on the one side and import substitution, on the other (trcollege.net, 2016).

Definitions of the public sector are varied in nature. In India, a public-sector company or undertaking refers to any corporation or company that is owned by the government (business.mapsofindia.com, 2012). However, the OECD provides a wide scope for public-sector activities by defining the public sector as the sector that includes:

All bodies, departments and establishments of government – central, state or provincial, district or county, municipal, town or village – that engage in a wide range of activities, such as: administration; defence and regulation of public order; health, education, cultural, recreational, and other social services; promotion of economic growth and welfare; and technological development. The legislature, the executive, departments, establishments and other bodies of government are also included, irrespective of their treatment in government accounts. Similarly, government-administered social security funds are also included. (OECD, 2002)

With such a wide scope, the public sector is expected to play a premier role in any economy. However, in the globally competitive open economy, the public sector has not been able to realize its true potential due to poor service quality and innovation. The 'New Public Management' (NPM) was a model introduced to reform the public sector based on sound business principles. The reforms aimed at promoting successful management techniques in old-style public bureaucracies to make them embrace a service-oriented working-style (Vigoda-Gadot *et al.*, 2008). NPM aimed to provide a solution to the perceived lack of innovation in the public sector, caused by risk-aversion and a culture which was innovation-unfriendly (Windrum, 2008).

Service quality and innovation are important issues in the public sector. In this regard, PWC (2014) commented that the reality of the public sector is that it is assessed by the efficiency of its service delivery. Improving service quality and innovation requires a change in the institutional culture of the public sector which would provide a more sustainable solution to these plaguing issues. This paper attempts to provide a long term sustainable approach towards improving service quality and innovation in the public sector from a human values-based spiritual perspective.

The spiritual viewpoint is used in this paper to create a framework for institutionalising a culture of excellence in the public sector. This attempt is emboldened by the significant evidence that the workers in the public sector were more spiritual than workers in the private sector and were more likely to

believe in transcendence, experience interconnectedness, have higher incidences of empathy, and have a greater sense of life meaning than their private sector counterparts (Houston & Cartwright, 2007). This approach is unique because the central premise of this paper is that a human values-based spiritual framework has the ability to provide sustainable solutions to the issues of service quality and innovation of the public sector. Eggers and Singh (2009) lamented that most often public-sector organisations do not have a lasting capacity for quality and innovation, due to quick fix methods adopted by them. Adopting a human values-based spiritual framework can help organisations achieve sustained excellence (Al-Qutop & Harrim, 2014) by creating a larger purpose, by enabling authenticity at work, and by providing a positive feeling of vitality (Kinjerski & Skrypnec, 2006).

This paper is organized as follows: after a review of the existing research in the area, the paper discusses the role of spirituality in the workplace. The paper then presents a human values-centred discussion of the drivers, barriers, and enablers of service quality and innovation based on the philosophy of a world spiritual leader. Finally, the paper builds a framework for service quality and innovation in the public sector from the human values-based spiritual perspective.

Literature Review

Research on service quality and innovation in the public sector has spanned several perspectives. Altshuler (1997) emphasized the need for studying the service quality public of the public sector because expectations of service quality were rising, largely because of implicit competition from the private sector. For example, when citizens visited the motor vehicle department, they expected the same kind of service they would get at McDonald's: quick, efficient, and courteous. Font (1997) suggested that public sector service quality must be evaluated from a customer perspective and it would be necessary to transfer successful experiences from the private sector to improve public services. PWC (2014) commented that changes in customer preferences and expectations were expected to be continuous for the public sector. Radical one-time changes to improve service delivery were unlikely to be a sustainable long-term solution. An institutional culture that allowed for continuous improvement was the real need of the hour. By learning from good practices across the private and public sectors and listening to its customers, the public sector would be in a position to continuously deliver on the customer promise.

Innovation in services is crucial for the sustained competitive advantage (Miller *et. al*, 2007). Den Hertog *et. al* (2010) defined service innovation as a new service experience or service solution that consisted of one or several of the following dimensions: new service concept, new customer interaction, new value system, new revenue model, new delivery system and technological expertise. Service

innovation impacted on the customer-service provider interactions and improved the experience of finding, obtaining, installing, maintaining, upgrading and disposing of products. Service innovations delivered better self-services by eliminating waiting and allowing 24/7 access via modern devices such as mobile phones, web browsers, and kiosks (IfM & IBM, 2008).

Recent research on public sector innovation (PSI) has been attempted from various perspectives (Altschuler & Behn 1997, Borins 1998, Albury 2005, Hartley 2005, Moore 2005). One of the research strands has been to understand the different levels of public sector innovation. Public sector innovation could occur at different levels: innovations in public administration and organization of public sector establishments, policy and regulations innovations, innovations in public campaigns and public information dissemination, innovations in revenue collection and generation, innovations in service and goods, public services or goods innovations, financial innovations, innovations in behavioural incentives provided, systemic innovations and conceptual innovations (Windrum, 2008). Based on these levels, the study suggested a taxonomy of public sector innovation comprising service innovation, service delivery innovation, administrative and organisational innovation, conceptual innovation, policy innovation, and systemic innovation.

Yet another perspective of research has been to appreciate the impact of PSI. The European Commission (2013) stated that efforts to improve innovation in the public sector were expected to have some notable public benefits such as improved productivity, efficiency of service delivery, and quality of public services. Through a metric named '*Innobarometer*', the Commission explained the importance of public sector innovation. Public service innovations had a positive impact on the probability that a company would innovate. Public corporations showed improved economic and innovative performance in countries where governments managed to provide improved services for innovation and created a more business-friendly environment. Thus, innovative and high-quality public services acted as a driver of business performance.

Research on service innovation in the public sector, too, has attracted attention. Pedersen and Nysveen, (2010) identified challenges to service innovation at three levels, namely at the policy level, at the industry level and at the firm level. In this regard, Altschuler (1997) noted that, in the public sector, innovation had never achieved significant status as a criterion of organizational excellence due to three reasons. Firstly, while government agencies faced urgent problems, passionate claimants, and muckraking journalists, they experienced little direct competition. Secondly, the political arena was characterized by high conflict; no analogue of profitability existed as a consensual criterion for appraising public sector innovations. Thirdly, people in government feared nothing more than newsworthy failure.

Finally, there has been very little research attention on the impact of spirituality and human values in the public-sector work space. In this regard, Houston and Cartwright (2007) argued that spirituality has received attention in the literature of other disciplines, like business and social work, but not in public administration. This was quite odd given the roots of service at the core of public administration, where public service was given the status of 'a calling'. Freeman and Houston (2010) made the case that it was important to understand public administration in the context of spirituality because the effectiveness of public services may be related to the practice of religion and spirituality.

Research has shown the benefits of spirituality in the workplace. These include improved job satisfaction, better job involvement, reduced intentions to leave the workplace, increased organizational commitment, increased morality and work ethic, higher motivation, and better employee loyalty (Amirkhani & Abadi, 2015). Moore and Casper (2006) conceived workplace spirituality as a three-dimensional construct consisting of self-work immersion, interconnectedness, and self-actualisation. These dimensions were operationalised using the measures of perceived organizational support (POS), affective organizational commitment, and intrinsic job satisfaction, respectively. Using survey data, the researchers found that the operational variables were positively and significantly related to each another. Even though spiritual constructs had positive correlation with workplace relationships, the researchers cautioned that as there was no intersubjectively-certified research till date, the measures used in research were debatable. Similarly, critics of workplace spirituality have argued that secular institutions, like business firms, should restrain from imposing spiritual values on employees. However, such criticisms lost their validity when spiritual values are aimed at helping employees find meaning in their work lives and have a mission of creating a community feeling in the workplace (citeman.com, 2008).

From a service quality and innovation perspective, spirituality can play an important role. Spirituality has the ability to improve creativity and productivity, increase involvement at work, and make employees more responsible, intelligent, trustworthy, open, and confident (Miliman *et al.*, 2003; Marques *et al.*, 2005). These values are prime requirements for better quality and innovation.

The review of literature in this section shows that there is a need to build a framework for service quality and innovation in the public sector from a human values-based spiritual perspective.

Spirituality and the Public Sector: A Human Values-Based Perspective

There are several definitions of spirituality. Saucier and Skrzypińska (2006) defined spirituality as a subjective experience of a sacred dimension. Sheldrake (2009)

on the other hand defined it as the deepest values and meanings by which people live. There are several ways of viewing spirituality in business, in general, and in the public sector, in particular. McLaughlin (2005) asked the question ‘What is spirituality in business?’ and gave a wide range of perspectives as answers:

- Treating co-workers and employees in a responsible, caring way;
- Participating in spiritual study groups or using prayer, meditation, or intuitive guidance at work;
- Making business socially responsible in the way it impacts the environment, serves the community, and helps create a better world;
- Embodying personal values of honesty, integrity, and good quality work in business.

Several researchers have emphasised the human values perspective of workplace spirituality. Lenka *et al.* (2010) stated that workplace spirituality is a framework of organizational values. Fawcett *et al.* (2008) considered that a spirituality-based organisation and a values-based organisation were one and the same. Further, at the root of the discussion of spirituality in the workplace was the notion of core values, which fostered a sense of connectedness and wholeness within the organization that facilitated individual and organizational growth. At a deeper level, McLaughlin (2005) stressed that the spirit in the business movement was a practical demonstration of the spiritual laws and principles, which were guiding the next step in human evolution. The spiritual approach worked towards honouring the essential divinity in each person.

There are several advantages of using a human values-based spiritual framework to address the issues of service quality and innovation. Firstly, as discussed earlier, a spiritual approach can provide a strong foundation for sustainable business excellence. Secondly the spiritual approach aims at individual transformation leading to organisation wide transformation. In this regard, Teeroovengadum and Teeroovengadum (2012) have pointed out that by putting people first, the human values-based spiritual approach committed individuals towards quality and innovation. Thirdly, the spiritual approach inspires the leaders of organisations to be role models in the quest of quality and innovation. Fry *et al.* (2017) have analysed the winners of the Malcolm Baldrige award and found that spiritual leadership had an important role in achieving quality and excellence. Finally, in an era of ecological challenges, it is necessary to ensure that improvements in quality and innovation also take into account their impact on the environment. The human values-base spiritual framework keeps this as an important part of excellence, working towards a triple bottom line.

Regarding assessment of workplace spirituality, Giacalone and Jurkiewicz (2003) identified ten value measures of spirituality at work: benevolence, generativity, integrity, humanism, justice, mutuality, receptivity, respect, responsibility, and

trust. Further measures and assessments have been developed by Shankar (2009), Steingard and Dufresne (2013), and Soder (2016), among others. This paper uses the human values perspective of spirituality to discuss the issue of public sector service quality and innovation.

Human Values-Based Spirituality: The Philosophy of Bhagavan Sri Sathya Sai Baba

Bhagavan Sri Sathya Sai Baba (referred to as Baba henceforth), who is venerated by millions as a foremost spiritual leader, has expounded the concept of spirituality from a human values perspective (for more information about Baba, the interested reader is referred to www.srisathyasai.org.in). Baba defines spirituality as the process of eliminating the baser values in each individual, cultivating higher human values and finally manifesting sublime values (Baba, 1999-2010, vol. 25).

Baba further elucidates that spirituality calls for the recognition of the manifold capacities manifesting in each person as emanating from the Spirit. It calls for developing the faith that all strength come from the Divine. Spirituality is thus the expression of the promptings of the 'Inner Spirit'. Spirituality should be an integral part of daily life. According to Baba, it is totally wrong to think that daily concerns have no relation to spirituality. Spirituality is the realisation of the role of the spirit in daily life. It is a way of life. Ultimately, spirituality seeks to unfold the divinity in each individual. Baba emphasises that true spirituality calls for the recognition of the oneness of all creation and the demonstration of the spiritual truth underlying this divine unity (Baba, 1999-2010, vol. 25).

The major human values manifested through spirituality include truth, right action, peace, love and non-violence (Baba, 1999-2010, vol. 19). The various facets of spirituality as outlined above show that Baba's philosophy is quintessentially '*Sanathana Dharma*' (eternal human values). Such a human values-based spiritual philosophy is universal and not culturally dependent. Mitroff (2003) and Jacobs (2011) asserted that spiritual values are universal and timeless. Using intercultural theory, Reave (2005) showed that spiritual values like respect, compassion, and appreciation go beyond the limitations of culture.

The philosophy propounded by Baba has found its applications in several projects and institutions which promote social welfare. These projects encompass a wide variety of areas like medical care, education, and social care. The uniqueness of these projects is that the benefits of all these projects are offered to all beneficiaries without any discrimination and free of cost. This has resulted in the creation of a values-based institute of higher learning (Sri Sathya Sai Institute of Higher Learning), a super specialty hospital and a water

supply project, which helps a population of more than a million (Chaden, 2004). The institute of higher learning has the vision of imparting values-based education creating citizens who have zeal to promote social welfare (Arweck & Nesbitt, 2007). It is interesting to note that alumni of Sri Sathya Sai Institute of Higher Learning have joined several public-sector institutions and they actively follow Baba's teachings in their workplace (Aitken, 2004).

The current paper is therefore an endeavour in applying Baba's philosophy in understanding complex global issues, such as the public-sector services. The focal thrust of the paper is to emphasize that a human values-based spiritual approach can lead to sustainable public-sector service quality and innovation that can ultimately promote social welfare. In the following section, the issues related to public sector service quality and innovation have been discussed in relation to the human values-based spiritual philosophy of Baba.

Public Sector Service Quality and Innovation: A Spiritual Perspective of Drivers, Enablers and Barriers

Service quality can be defined as a form of attitude of customers that results from a comparison of expectations with perceptions of service performance (Parasuraman *et al.*, 1988). Gronroos (1984) classified service quality as technical quality and functional quality. Good service quality was the consistency of customer quality experience with expected quality experience.

Service innovations are generally about offering new or adapted solutions to the customer's needs in ways that enhances the perceived value of the offering (Jairam, 2013). Service innovation is defined as a combination of technology innovation, business model innovation, social organisational innovation, and demand innovation with the objective to improve existing service systems (incremental innovation), create new value propositions (offerings) or create new service systems (radical innovation) (IfM and IBM, 2008).

The public sector has several drivers, enablers, and barriers to service quality and innovation which have been discussed from a human values-based spiritual perspective.

Drivers

A combination of internal or external pressures is driving the public sector towards better service quality and innovation. With regard to service quality, customer expectations are the prime driver. In this regard, Nor *et al.* (2010) observed that public-sector organizations agree that customer service is one of the most important

vital factors that contribute to the establishment of reputation and credibility among the public. Complaints of long queues, poor service deliver, and insufficient physical facilities may affect the image and level of service quality in the public sector. Increased customer expectations are therefore driving the public sector to improve their service quality. On the other hand, according to Borins (1998), internal issues within an agency or department are the most frequent drivers for innovation. Human resources themselves are internal drivers. The middle management and front-line levels contain many younger, often recent university graduates who are close to day-to-day operations as well as close to cutting-edge thinking they encountered recently at universities. The new thinking of younger executives makes them to design innovative ways of providing public services.

It is useful to note that both the internal and external drivers mentioned above lead to reactive approaches towards service quality and innovation. To be true, the public sector has been reacting because its customers or new age employees have been forcing it to do so. Reactionary approaches to service quality are perilous. Thompson (2016) stated that the weakness of reactionary strategies is that they lead to customer or employee dissatisfaction. Even without an indication, dissatisfied customers may simply go elsewhere for service the next time and advise others to do the same. Schulze (2014) stated that reactionary approaches ultimately lead to fire-fighting and finger-pointing. Similarly, Eggers and Singh, (2009) pointed out that typically innovation in government happened in one of two ways. Either innovation intrudes itself on a public-sector organisation in response to a crisis, or some individual (or small group of individuals) champions a specific innovation. In either instance, the benefits of the innovation are limited. Once the crisis has passed or certain individuals responsible for the innovation have moved on, the organisation is left with no lasting capacity for innovation.

The spiritual perspective, on the other hand, gives prominence to proactive behaviour. Spirituality emphasises that love is the prime undercurrent for all human values (Baba, 1999-2010, vol.18). Love creates proactive behaviour. In this regard, Baba stresses that 'Love without duty is Divine. Duty implies force or compulsion, while love is spontaneous and expresses itself without external promptings' (Baba, 1999-2010, vol.14). Baba further explains that a proactive approach to service leads to the practice of the sublime value of sacrifice, while a reactive approach is inclined more towards the baser instincts of gaining publicity (Baba, 1999-2010, vol.11). Baba urges that professionals in the areas of education, health care, legal services, and business must reach out to the needy to render services proactively (Baba, 1999-2010, vol.21).

Scholars have emphasised the benefits of proactive approaches towards service quality and innovation. Proactive approaches attempt to utilise the embedded value of firms effectively to retain customers. In a proactive mode, service quality and innovation gets enhanced due to collaboration among service

providers and sharing of best practices (Schulze, 2014). In this regard, it is useful to note that recently Public Power Solutions, a UK based public service unit, was declared as the most proactive public sector body in the UK. The company has built UK's first Solid Recovered Fuel (SRF) Plant in Swindon, bringing together the best of the public and commercial sectors to deliver an innovative waste solution that benefits the Swindon Borough Council and local communities. The SRF plant has helped in diverting 97% of Swindon's municipal waste from landfill, has saved the council over £1.6m in landfill tax, and has facilitated in producing a valuable energy generating resource which has been replacing fossil fuels (www.publicpowersolutions.co.uk, 2016).

Barriers

Research has identified several barriers to service quality and innovation in the public sector (Commonwealth of Australia, 2010; European Commission, 2013). These typically include lack of human or financial resources, strict regulatory requirements, lack of management or political support, inadequate time availability, risk-aversion, external opposition, lack of discussion on failed innovations, innovation not being a strategic priority, public sector operating in silos, influence of political factors, lack of competition and profit motive, want of rewards for risk-taking or successes, excessive bureaucracy, and low pay scales.

A review of these barriers quickly points out to an important tendency in the public sector, which is shifting the blame for the lack of service quality and innovation to conditions which seemingly cannot be easily changed. This helps the organisation to justify its existing position and maintain its status quo. In this regard, the United Nations (2005) stated that "an organizational culture dominated by rigid adherence to rules and regulations very seldom encourages staff to ask challenging questions and to alter the status quo. In many public services, in fact, the practice of questioning the status quo is not in accord with conventions, and in some instances, the practice is even actively discouraged". With regard to service innovation in public services, it has been shown that while re-imagined public services in a digital age can create huge opportunities for smarter, more efficient, citizen-centric public services, these can also be seen a threat to the status quo and a challenge to long established procedures and values (nesta.org.uk, 2016).

Therefore, the challenge for many reform-minded governments is often to radically change the mindsets of both leaders and public servants in order to allow for new forms of communication, initiative-taking and learning to improve public service and innovation (United Nations, 2005). However, these reforms face tremendous resistance to change (Madinda, 2014).

King (2010) suggested that successful change efforts in the public sector have

to start with a vision of radically improved performance and the relentless organization-wide pursuit of that vision. It has to be an introspective and inclusive process by which an organization formulates its values and revisits its mission that allows organizations to serve their customers and communities, to be viable and relevant in an uncertain future. A spiritual perspective can effectively ease this process by enabling appropriate values of selfless service and compassion.

In this regard, Baba (1999-2010, vol. 11) gives the following guidelines for true service:

- Rendering service selflessly with a compassionate heart alone is true service.
- One should be looking at all times, even beyond the horizon of one's allotted tasks for any extra opportunity to serve.
- Every act done with sympathy and skill to anyone in distress is true service.
- Compassion must express itself in action to relieve the suffering. True compassion should emanate from the heart.

Baba (1999-2010, vol. 23) states that a transformation towards compassionate service must begin with the individual. Individual change has the potential to trigger a global change. Thus, spirituality emphasises that organisation wide transformation has to first start with individual transformation.

When values of selfless service and compassion are inculcated in the culture of public sector organisations, it will reduce any resistance to change to improve service quality. Cultivating compassion in the workplace is essential to improve quality. In this regard, McLaughlin (2005) described the instance of managers and union workers of Southern California Con Edison attending sessions called “The Heart Shop” to cultivate compassion for each other, creativity, and a new intelligence of the heart. Similarly, King (2010) recorded the instances of profound transitions that have happened in the public sector in the recent times. Several major transformation efforts can be observed across the U.S. federal government, in agencies as diverse as the Department of Defence, United States Postal Service, Internal Revenue Service, Centre for Disease Control, and the Government Accountability Office.

Enablers

Several establishments, such as the European Union, Australian Government, and PWC have attempted to measure service quality and innovation in the public sector (Commonwealth of Australia, 2010; European Commission, 2013; PWC, 2014). One of the important criteria used for measurement are the enablers of quality and innovation, which include the share of employees in public administration with

a university degree pursuing ‘creative occupations’, government effectiveness, and regulatory quality through the use of ICT, and online availability of public services measured using the e-government development index (EGDI).

A cursory look at these enablers shows the emphasis on the usage of technology to innovate and effectively deliver public services. PWC (2014) stated that, bearing in mind the relentless pressure they are under to meet customer expectations, public sector organisations should focus first on improving front-end service delivery capabilities, before tackling back-end processes. This is where technology can play the role of an enabler, by ‘allowing things to happen’, facilitating connected government through improved data sharing and collaboration in service delivery. Similarly, the Commonwealth of Australia (2010) observed that technology is re-shaping public interactions with business and government and increasing public expectations of engagement and service delivery. To realise these expectations and to capture the value of engagement, agencies should be timely and smart adopters of Web 2.0 tools and approaches. Technology in public services, whether it is banking or tax services, is being used as a tool to reduce human interface (NACEN, n.d).

There is no doubt that technology has played the role of the prime enabler to improve public sector services. However, Commonwealth of Australia (2010) thoughtfully observed that, ‘while technology should be used primarily as an enabler of transformation, we see an increasing number of public sector leaders trusting in it as a universal panacea for aligning public sector service delivery with customer needs’. The overemphasis on technology has led to two important consequences: indiscriminate use of technology and technology without a human face. Digital Green (2013) argued that the indiscriminate use of technology had actually precipitated an agrarian crisis across the world. Further, the indiscriminate use of technology had led to unsustainable use of resources impacting the future generations adversely. Overemphasis on technology usage leads to technology without the human face. Gandhi and Joseph (2005) pointed out that technology without a human face cannot lead to social transformation. Science and technology without the human element can be used for purposes that are dangerous and anti-ecological.

Overemphasis on technology undermines human values and spirituality. Baba (1993) exhorts thus:

the whirlwind of the rapidly progressing science and technology, coupled with its commercialisation, is bringing about undesirable changes in our society by way of uprooting the moral or ethical values so essential for human well-being. Science and technology have, no doubt, contributed substantially to material progress; but they have altogether undermined spiritual values such as

selflessness, divinity, and dignity inherent in man. In a way, they have devalued humanity itself so much so that the present generation of young men and women are unable to recognise their divine nature. They are considering self-centredness as the goal of life. Evil qualities like ostentation, egoism, and excessive and empty talk are playing their devil dance in society.

What is therefore required for service quality and innovation in the public sector is technology blended with human values. Baba (1999-2010, vol. 12) gives the solution: as science develops and technology advances, humility and love should also develop to the same extent. Pizzati (2012) termed institutions and people who integrate technology and spirituality as ‘Technoshamans’ and emphasised that technology imbued with spirituality and human values was the true need of the hour.

Public sector institutions do need to use technology with caution. As the Commonwealth of Australia (2010) urges, ‘in the world of technology-enabled service, there is still no substitute for ‘old fashioned qualities’, such as courtesy, friendliness and caring. An important aspect from the perspective of the citizen is the relevance and engagement with which services are delivered. This is particularly true for social services where personal contact is essential’. It is also important to recognise that ‘eGovernment is not about technology, but, it is about people; it is about putting the citizen in the centre.’

As discussed in this section, when the drivers, barriers and enablers of public sector service quality and innovation are understood from a spiritual human values-based perspective, they get added meaning and significance.

Public Sector Service as a ‘Calling’: The Human Values-Based Spiritual Framework

The previous section studied the major drivers, barriers, and enablers of public sector service quality from a spiritual perspective. This section combines the major understandings of these discussions into an integrated framework. This is presented in Table 1.

Table 1

Human Values-Based Spiritual Framework of Public Sector Service Quality and Innovation

Issue	Existing perspective		Human values-based spiritual perspective	
	Emphasis	Implication	Emphasis	Implication
Drivers	Customer expectation and innovation champion driven.	Reactionary in nature. Always on fire-fighting mode. Non-sustainable.	Love, service, and sacrifice.	Proactive in nature - reaching out to serve. Sustainable service and innovation.
Barriers	Existing conditions are deep seated and difficult to change.	Encourages status quo in behaviour. Discourages challenging the current situation.	Individual transformation-based organisation change. Transformation based on creativity and service.	Creates an organisation culture of profound transformation and relentless pursuit of perfection.
Enablers	Overemphasis on technology. Technology viewed as a panacea.	Indiscriminate use of technology. Technology without a human face and aiming to reduce human interface.	Technology integrated with spirituality.	Appropriate use of technology. Importance of human values of courtesy, friendliness, dignity, and caring in service and innovation.

The above table shows how the drivers, barriers, and enablers of public sector service quality and innovation can be viewed from a different perspective using the lens of human values and spirituality.

The managerial implications of this perspective are profound. Firstly, public sector institutions must work towards creating corporate cultures that emphasise performance excellence based on a higher mission of social welfare. With such a distinctive culture, they are more likely to attract a wider pool of candidates who are genuinely inspired by the organisation's service ideals. Their level of commitment to the organisation's objectives, combined with technology, would help to ensure the delivery of improved customer services (PWC, 2014). Secondly, the spiritual framework emphasises excellence based on individual transformation. This puts the onus on the leaders of public sector to act as role models of service quality and innovation to inspire others in their organisations. Thirdly, it is important to note that the framework discourages indiscriminate use of technology. Technology needs to be wedded with spiritual values so that it can have a lasting impact. Finally, it is essential to realise that public-sector service is a calling. This understanding would ensure that policies created would maximise the value of all stakeholders concerned rather than just financial stakeholders.

While the framework mentioned in this section can provide sustainable improvements to public sector service quality and innovation, certain precautions need to be taken in its understanding and implementation. Spiritual values are

based on inner individual transformation. In this regard, Baba (1999-2010, vol. 26 points out that spiritual values must be cultivated from the inner 'source' rather than through external 'force'. This implies that in the enthusiasm to create a culture of sustained excellence, spiritual values should not be imposed on people. Instead a conducive environment which inspires the practice of these values must be created. Further, in this context, it should be understood that such an environment cannot be created without the leadership of the organisations espousing these values. It would be meaningless if leadership actions show disregard to the practice of these values. Creating a culture of sustained excellence based on spiritual values should be seen as a long-term endeavour and not as a quick fix solution.

Directions for Future Research and Conclusion

Further research is possible in this direction. It is possible to study the cases of public sector service excellence and understand whether a human values-based spiritual framework has been the undercurrent inspiring force. Employees of public sector institutions can be studied to understand the intricacies involved in institutionalising a culture based on spiritual values. It would be useful to develop standardised metrics and assessments to study drivers, enablers, and blocks to service quality and innovation from a spiritual values perspective. Initiation of research in these areas would go a long way in providing sustainable solutions to the public sector.

Houston and Cartwright (2007) lamented that 'the common pronouncement of a career in public service as a "calling" echoes with a decidedly spiritual chord. However, the spiritual roots of public service have been ignored in much of the public administration scholarship'. This paper attempted to show that developing a perspective of spirituality based on human values can provide a long-lasting solution to this perplexing issue. When firms sincerely adopt this perspective, they can realise their true potential of working towards a better and more welfare oriented society.

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Author Note

The author is thankful for the useful comments received from two anonymous reviewers, which helped to improve the quality and presentation of the present manuscript. The author humbly dedicates this paper to Bhagavan Sri Sathya Sai Baba, The Revered Founder Chancellor of Sri Sathya Sai Institute of Higher Learning, Prasanthinilayam, India.

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