Volume 1 • Issue 1
January 2023

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IMIB Journal of Innovation and Management

IMIB Journal of Innovation and Management is published biannually in January and July by International Management Institute (IMI), Bhubaneswar.

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Printed and published by Nitin Bhushan, Chief Administrative Officer, International Management Institute Bhubaneswar, on behalf of International Management Institute Bhubaneswar, IDCO Plot No. 1, Gothapatna, PO: Malipada, Dist.: Khurda, Bhubaneswar 751003, India. Printed at Sai Printo Pack Pvt Ltd, A 102/4 Phase II, Okhla Industrial Area, New Delhi, Delhi 110020.

Editor-in-Chief: Ramesh Behl

About the Journal

The journal is born out of IMI Bhubaneswar's emphasis on one of the key pillars of its sustenance–research. IMI Bhubaneswar, a young institution with a rich legacy, has always been at the forefront to push the horizons of research awareness within the academic fraternity. The journal aims to serve as a forum for creation and dissemination of knowledge on innovations and its application to solve challenges in business management. The journal is international and interdisciplinary in nature.

The main focus of the journal is to provide a platform to the academicians and practitioners to discuss innovations and their implications on business management and processes. It focuses on bridging the gap between academia and industry for cross fertilization of ideas leading to effective dissemination of innovative solutions in emerging areas. The journal features research papers across function areas on topics such as customer relationship management (CRM); market segmentation; supply chain management; data mining tools & techniques; block chain; artificial intelligence (AI); internet of things (IoT); customer lifetime value (CLV); economics of information technology; cloud applications; cyber security; mobile computing; geographic information systems (GIS); information systems and ethics; sustainability; green computing; digital marketing; social media; social analytics; supplier relationship management; enterprise solutions; virtualization; cognitive science; governance; entrepreneurship; design thinking; VR or augmented based learning and development; HRMS and HR score card; people analytics; automation in performance management; algorithm trading; RegTech; and FinTech.

The journal is primarily an application-oriented journal and therefore invites research papers that are based on evidence and produce findings that are implementable. The journal is impartial towards methodology used as long as it is robust and relevant.

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Aims and Scope

IMIB Journal of Innovation and Management offers a platform for interface between emerging business management problems and evolving innovative techno-management solutions. It serves as a platform for seamless integration of methodological, technological and disruptive developments, and their business applications. We publish articles which address research in technology, techniques, processes and applications in business. The journal, therefore, bridges the gap between academia and industry for cross fertilization of ideas leading to effective dissemination of developments in emerging areas.

IMIB Journal of Innovation and Management is an interdisciplinary journal in the area of business management which captures developments in technology to facilitate application in business. The journal facilitates dissemination of knowledge on shifting techno-management paradigms and maps its cascading consequences on various facets of business (Marketing, Finance, OB HR, Operations, Strategy, Entrepreneurship, etc.). We encourage research that investigates the impact of innovations on various stakeholders such as customers, vendors, partners, etc. In pursuit of this endeavor, we publish scholarly research as well as practice papers offering unique insights.

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Volume 1 Issue 1 January 2023

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Editor-in-Chief's Note

IMIB Journal of Innovation and Management
1(1) 7–8, 2023

DOI: 10.1177/ijim.221140664
jim.imibh.edu.in

I am delighted to introduce the *IMIB Journal of Innovation and Management (JIM)*, the first exclusive journal of the International Management Institute (IMI) Bhubaneswar published by SAGE Publications. JIM provides perfect opportunity to immerse oneself in the advancements of the fast-growing field of innovation and publish in a journal that is going to have an excellent reach and expectations of a significant impact. Journal is a double-blind peer-reviewed, international, multidisciplinary, covering business, management, technology, operations management, economics, finance, human capital, industrial organization, analytics and other related fields. JIM aims to be a leading peer-reviewed journal and an authoritative source of information for analyses, reviews and evaluations related to various facets of business.

JIM aims to be the leading international journal for the study of innovation and management. The basic aim of the journal is:

- To provide a platform for seamless integration of methodological and technological developments, and their business applications.
- To facilitate interface between emerging business problems and evolving techno-analytical solutions.
- To address research in technology, techniques and applications in business.
- To bridge the gap between the academia and industry for cross-fertilization of ideas leading to effective dissemination of developments in business analytics and other emerging areas.

JIM is a multidisciplinary, bi-annual journal in the area of business management that capture developments in technology, processes and products to facilitate application in business. Journal will serve as a platform for the dissemination of knowledge on shifting techno-analytical paradigms and map its cascading consequences on various facets of business (marketing, finance, HR, operations, strategy, entrepreneurship etc.).

The journal will include up-to-date, high-quality and original contributions—research papers, reviews, case studies and syntheses as well as book and conference reviews—dealing with questions on how, why and when an emerging technology and/or innovation occur, succeed, fail and disappear. Journal will publish scholarly research as well as practice papers which offer unique insights.

JIM is served by a very competent editorial board along with a network of scholars from all around the world. The editorial board is drawn from different disciplines to secure high-quality cross-functional contributions. The editorial

board will ensure originality and utility of the contributions in order to achieve high-quality, impactful publications in the journal.

JIM will strive to attract and engage with researchers, academicians and corporate leaders in the area of innovation and management. University and Corporate Libraries, individual academicians, researchers and professionals are the primary target group for the journal. The journal will cater to intellectuals from all spheres of life and disciplines. It will provide a perfect platform for researchers to publish their work in emerging areas of business and evolving techno-analytical solutions. It will address research in technology, techniques and their applications in business across business functions. Thereby, the journal will be an interdisciplinary journal in the area of business management and captures business impact of new developments in technology, economic environment and digital diffusion.

Any research paper, case study, book reviews and innovations that you wish to submit, either in an individual or a collaborative manner, are much appreciated and will certainly substantially contributes towards the development and success of the journal. All papers are going to be double-blind peer-reviewed to maintain the quality of the publication.

Best wishes and thank you in advance for your contribution to the journal.

Ramesh Behl
Editor-in-Chief
IMIB Journal of Innovation and Management

Editor's Note

IMIB Journal of Innovation and Management
1(1) 9–10, 2023

DOI: 10.1177/ijim.221140663
jim.imibh.edu.in

International Management Institute (IMI) Bhubaneswar is privileged to launch its journal: the *IMIB Journal of Innovation and Management (JIM)*. It is indeed a proud moment not just for members of the editorial board, or for members of the IMI family but for the entire academic fraternity. The first volume first issue of JIM would see daylight with seven articles on a wide range of topics related to innovation and management. The content of the articles elucidates our thrust on offering a platform for studies related to innovation in the context of management.

The first article entitled 'Qualitative Innovation in the Light of the Normative: A Minimal Approach to Promoting and Measuring Successful Innovation in Business' talks about the quality of innovation and how innovation should be judged based on its ability to create value and contribute towards quality of life in society. The second article entitled 'India's Frugal Innovations: Jugaad and Unconventional Innovation Strategies' emphasizes upon collaborative development of affordability driven innovations to provide solutions to the problems faced by economically weaker sections of society. Both these articles reiterate the relevance of social sensitivity in any innovative endeavour. The third article entitled 'Review of Adoption Theories in Context of Blockchain' showcases the application of emerging technology in evolving areas such as cryptocurrencies and delves into the diffusion process of this innovation.

In the fourth article of the first issue of the journal entitled 'Funding Failure: Determinants of Persistence', the authors discuss the aftermath of the failure to obtain financial support from crowdfunding platforms. The study explores the uncharted territory of unsuccessful funding initiatives to determine the drivers of entrepreneurial persistence. The fifth article entitled 'The Portrayal of Social Media Marketing in the Luxury Tourism Industry: A Review of the Literature and a Preliminary Analysis' undertakes a systematic literature review to unravel how tourism academia has assessed the topic of luxury travel. The study offers a snapshot of luxury tourism research during the period 2010–2020 and provides guideposts for future research in the domain intersecting social media vis-a-vis luxury tourism.

The sixth article entitled 'An Empirical Study of the Movement of Sectoral Indices and Macroeconomic Variables in the Indian Stock Market' examines the dynamic movement between the Indian stock market sectoral indices and the three macroeconomic variables of oil price, gold price, and exchange rate. The study, thereby, throws light on the association between macroeconomic

indicators and market and stock market performance in post-COVID scenario. The seventh and final article entitled 'Economic Aspect of Implementing Green HR Practices for Environmental Sustainability' assesses the linkage between the adoption of green HR practices by organizations and its cascading effect on employee commitment towards a sustainable environment.

The manuscripts published in the first issue of JIM use various techniques to attain their respective objectives, for example, qualitative research, systematic literature review, vector auto-regression modelling and structural equation modelling. Despite this diversity in approach, the articles are inherently linked through their efforts to address myriad facets of innovation pertaining to management.

Let me take this opportunity to congratulate the authors on the publication of their work in JIM, and thank the reviewers for their support in improving the quality of each one of these manuscripts. We look forward to your continued patronage.

Manit Mishra
Editor
IMIB Journal of Innovation and Management

Article

Qualitative Innovation in the Light of the Normative: A Minimal Approach to Promoting and Measuring Successful Innovation in Business

IMIB Journal of Innovation and Management
1(1) 11–24, 2023

DOI: 10.1177/ijim.221091004
jim.imibh.edu.in

Anna-Vanadis Faix[1]

Abstract

Innovation has now become a core issue in companies and the economy, and it is becoming the leading driver of growth and prosperity. However, there is often a lack of uniform and holistic concepts that grasp the phenomenon and integrate it interpretatively, and, therefore, business structures towards innovation cannot be defined and interpreted adequately. This article aims to take up this question and answer it within a minimal concept of innovation quality. The quality of innovation is not based on the profit of the company or other one-sided economic core variables but rather on the general creation of value and the improvement of the quality of life in a society. This makes it possible to create a normative basis for a general evaluation that can be used to interpret structures in the company that are conducive to innovation and long-term solutions towards creativity and critical thinking.

Keywords

Innovation quality, value creation, business structures, minimal conception, welfare, society

[1] School of International Business and Entrepreneurship (SIBE), Steinbeis University, Herrenberg, Germany

Corresponding author:
Anna-Vanadis Faix, School of International Business and Entrepreneurship (SIBE), Steinbeis University, Kalkofenstraße 53, 71083 Herrenberg, Germany.
E-mail: a.faix@steinbeis-sibe.de

Introduction

> If you look at history, innovation doesn't come just from giving people incentives; it comes from creating environments where their ideas can connect.
>
> —Johnson (2021)

Innovation is one of the most important core concepts in the modern economy. The call for innovation and the constant new, especially in times of crisis and uncertainty, plays an ever-increasing role (see, e.g., Veccio, 2003). In the global networked world, this not only makes innovation itself an increasingly difficult undertaking but a correspondingly growing pressure also weighs on companies and entrepreneurs (Mergenthaler et al., 2020). Despite the centrality of innovation for companies and entrepreneurship, connections in this context often remain unclear or at least imprecise within their deeper understanding (Kisgen, 2017). This is sometimes due to the different definitions and approaches of innovation research. On this basis, innovation in the real context of the company remains a constant risk and is always indirectly connected with breaking away from old structures (Faix et al., 2019). This article precisely addresses this question and attempts to clarify which corporate structures promote innovation and creativity towards innovation on a basic level and, above all, why. At the core of this analysis is the development of a normative understanding of innovation quality: that is a definition of when it is a good and successful innovation at all and in which context. This is a necessary foundation for understanding and grasping further structures.

In order to do this, I will first approach the concept and meaning of innovation (Chapter Innovation: Classic Concepts and Meaning). The current state of research will be taken into account and discussed. Due to the abundance of definitions and approaches to innovation, however, the core concept of Schumpeter (1911) will be the main focus of consideration. This concept plays a central role in the most actual approaches. On this basis, the core concept of innovation, which is as broadly defined and inclusive as possible, is to be elaborated. Here, we can also speak of a minimal conception, which seems necessary in order to be able to speak of innovation at all and to understand the phenomenon as holistically as possible.

Building on this minimal concept, possible problems and open questions can then be discussed in a second step (Chapter 'Problems of the Concept'). On the one hand, these arise from practical references with a view to existing structures that are found in most companies and thus also in the standard understanding of economics (Faix, 2021). However, these can also be transferred and expanded with a broader view of possible theoretical problems if one asks oneself what the core goal of innovation is. The theses to be elaborated and defended are that (a) traditional corporate structures often seem to be less conducive to innovation and (b) this is related to our basic economic thinking, which often answers the practical question of growth with purely economic indicators, for example, the gross domestic product (GDP) per person or the company profit (see for discussion, e.g., Kimakowitz et al., 2011). The latter is helpful in identifying further structures and ideas behind the concept of innovation itself.

Due to the open questions arising here about the foundation for the evaluation of innovation and a rejection of one-sided purely economic (utilitarian evaluated) core variables (see, e.g., Dierksmeier, 2011), the checking of evaluating structures in companies according to their innovative capacity has so far been missing. The criticism presented in Chapter 'Problems of the Concept' will, therefore, be contrasted with an alternative argumentation that takes into account the previous problems of innovation research and integrates them accordingly (Chapter 'Innovation Quality as Guide to Better Understanding'). On this basis, in conjunction with the minimal concept discussed in Chapter 'Innovation Classic Concepts and Meaning', an assessment standard can be defined and derived: the concept of so-called innovation quality (Faix et al., 2014). According to Faix et al. (2014), the quality of the innovation with regard to the benefits in a society is at the centre of consideration. This basic idea is to be generalised and expanded on a minimal core concept. Therefore, the reference is made to the quality of life of individuals or groups in a society, without already referring to the possible fixed basic needs or preferences.

On the basis of the definition of innovation quality structures can be derived that promote innovation and creativity itself. However, along the basis of the definition itself, not only the company and its internal structures are in view but the structures of the company and its role in society can also be derived from it. The concept of innovation quality proves to be robust and helpful at this point, despite being defined as minimally as possible. On this basis, it can be shown that above all, open corporate structures in combination with a transparent consensus internally promote innovation and creativity. This also corresponds to much of the data that is available on this subject. Even if a lot of detailed questions remain unanswered, the concept provides a general structure of interpreting these data. On the other hand, the transparent and cooperative of the basic definition can provide first external reasons for the possible quality of company innovations.

Innovation: Classic Concepts and Meaning

In order to be able to identify structures that promote innovation in the desired economic context (or can promote it at all), it is necessary to better understand the concept itself. In the following, it is, therefore, important to approach the concept of innovation in its core understanding. This core understanding should be reduced to a minimal definition in order to grasp and identify the concept in its entirety and diversity. This core understanding is of central importance for two reasons: First, innovation is a broad subject area in which countless concepts and definitions can be found. A simple literature research here already leads to a high number of different definitions and approaches (Kisgen, 2017). For example, Rogers (1998, p. 2) gives the following definition of innovation:

> Innovation is the process of introducing new ideas to the firm which results in increased firm performance.

Whereas Kogbayev and Maziliauskas (2017, p. 59), on the other hand, defines innovation as follows:

> Innovation is the core action for the development and productivity of any economic activity. Investment activity and its results are directly dependent on the type of innovation that has been used.

On the other hand, the core understanding determined here serves to identify the possible structures and to be able to relate them to the actual state within companies. This requires an understanding of innovation that is as open and inclusive as possible, which covers broad areas of the phenomenon and attempts to avoid a possible concentration on only one aspect (exclusivity). The term 'minimal conception', thus, refers to the search for what seems to be at least necessary in order to be able to speak of innovation in general (without reference to concrete application contexts).

One of the most important models and descriptions of innovation, in addition to the countless modern versions, can be found in Schumpeter (1911), who is the forefather of innovation. As different as today's definitions and explanations may be, Schumpeter's understanding still plays an important and far-reaching role. The two cited examples of possible definitions of innovation are also indirectly based on important characteristics in this respect. Due to the role and definitional importance of Schumpeter in this regard, this should also serve here as a first and central starting point for the defined core concept. Schumpeter (1911, p. 89) describes innovation in essence as follows:

> Situations emerge in the process of creative destruction in which many firms may have to perish that nevertheless would be able to live on vigorously and usefully if they could weather a particular storm.

In his theory of economic development, Schumpeter attributed all growth in essence to the person of the so-called 'creative entrepreneur'. This person generates growth in the form of innovation in order to withstand economic competition or, moreover, perhaps even to completely outpace the competition. In the latter case, innovation creates an advantage on the market that can be achieved by a company. For Schumpeter, this represents the core idea of the apparatus of capitalism, which is driven by the constant so-called 'creative destruction' and, thus, constant innovation (Schumpeter, 1911, pp. 136–137). The term 'creative destruction' refers to the destruction of the old and the creation of something new. The new, thus, always indirectly presupposes a form of the act of destruction. According to Schumpeter, it is only on the basis of the pure essence of capitalism itself that the permanent pressure on companies and the person of the entrepreneur to constantly innovate arises. In today's context, it can also be shown and argued that the speed of global acceleration has increased the pressure to innovate economic processes and that inventing something radically new has become drastically more complex (Faix, 2020). These processes of increasing acceleration include not only technical and digital acceleration but also global networking itself, as well as the acceleration of the pace of life and the social change that is taking place (Faix & Mergethaler, 2010, p. 47).

In addition, for Schumpeter, forms of innovation can occur in various ways or be initiated by the entrepreneur. The important core is always the creative destruction itself and with it the advancement of something through the creation of something new. The term of innovation itself (Latin novus, that is the new) already provides a wider understanding. Besides only describing the term 'new' is also to be understood as offering a recognisable new quality or a clear difference from the old, previous processes or practices (Fichter, 2015, p. 12). Merely a gradual improvement is thus not meant, as this also fits into the Schumpeterian understanding. Nor is the concept of innovation to be limited merely to technical contexts, but rather to the underlying drive per se and 'owed' to the creation and, therefore, creativity towards the new. Due to the excessive use of the term, which is due to its importance, it is often used in an inflationary manner. On this basis, there is an ongoing debate about the necessary differentiation of true innovation from the possible so-called pseudo-innovation (Fichter, 2015).[1] Based on Schumpeter as well as the original understanding of the term, the following minimal conception of innovation (MI) can be derived so far:

MI: Innovation means the creation of something radically new (creative destruction) from or for a reason x.

A minimal conception written in this way encompasses the phenomenon in a very holistic and multifaceted way and does not exclude any form of innovation (area of innovation) ad hoc. At this point, the underlying drive towards innovation would be debatable, as cases of mere coincidence could be excluded here. However, innovation does not end with a mere accidental discovery, but with the further implementation in reality as well as the communication that leads to true innovation. Therefore, there always seems to be a certain underlying intentionality. However, this already points to a possible criticism or at least open questions in this context. The minimal concept is not detailed enough to figure out what supports a drive to innovation.

Problems of the Concept: A Question of Evaluation

In the previous chapter, the basic concept of innovation was discussed and illuminated, and a minimal core understanding of innovation was argued for on this basis. This core understanding is now to be contrasted with the current state of affairs in common business practice and, building on this, placed in possible problematic relationships. The first possible problems have already been indicated accordingly. In this chapter, it should be argued, on the one hand, that that current corporate practice tends to hinder and possibly restrict innovation in this sense, especially with rigid hierarchical structures.[1] Furthermore, it should be made clear that the core framework of innovation is removed from any evaluation and as such may not already completely fulfil the required demands of standard economics (drive question). Rather, there is a lack of foundation that defines innovation as a successful or even good innovation.[2] This is to argue against a sole orientation of

successful innovation along an economic (profitable) company growth or standard core variables. However, extended concepts at this point require a corresponding normative foundation.

For the first critical point,[1] it is necessary to take a look at real companies in order to compare the current situation with the previous minimal concept. Since the current concept is based on a minimal definition, I will limit myself here to the most important points and focus primarily on corporate structures. In terms of these structures, a so-called hierarchical pyramid can still be found within most forms of enterprise today (Kühl, 2015). This is reflected in corresponding forms, and it also approaches of power and influence, which are widely applied here (Dahl, 1957; French & Raven, 1959). Decision-making, which is fundamental for the incentive and implementation of possible innovations, runs through several coordinated levels from top to bottom and usually starts from the management or executive level. One can also speak here of the so-called top-down innovations. Even if weakening of this hierarchy is becoming more and more common (especially in younger companies), there are still usually imputed levels of this form behind it (Kühl, 2015, p. 3).[2] Similarly, evaluation systems and work specifications run from the top-down.

Contrary to these traditional structures, however, it can be shown that open and more democratic forms of enterprise seem to promote innovation (see, e.g., Becker et al., 2008; Faix, 2021). Along the previous minimal definition, it can be argued that innovation has no limitations here and can arise from various drives within the company (Bösch, 2021). Accordingly, it does not have to proceed unilaterally from top to bottom, and one-sided hierarchy structures and their consequences of possible work interpretation restrict it accordingly. Alone the participation of several agents who are creatively active with each other on different levels or who provide possible input can advance and promote innovation accordingly. This is especially the case since it is not exclusively about possible improvement processes but about the idea and implementation towards something completely new. Thus, at first glance, the current state within companies (also given the previous definition) does not seem to necessarily promote innovation and produce the corresponding structures for this. Creativity through possible errors and communicative exchange (at all levels) is even indirectly restricted by this. This is especially the case when employees do not stand behind possible goals of the company (or these are communicated in a correspondingly transparent way) and concentrate on their business as usual (Faix, 2021).

However, the question of which structures to promote must now also be answered indirectly by the question on the basis of valuation or the individual drive.[2] Most approaches, including Schumpeter's, focus on economic growth itself at this point. It then remains questionable how this possibly translates to companies (or metrics in general). Most companies seem profit-oriented at this point (i.e., it is about profits). The foundation for this view can be found in a corresponding general (utilitarian) understanding of an economy. Sen (1988, p. 29) writes critically on this.

> The standard proposition of modern welfare economic depend on combining self-seeking behaviour, on the one hand, and judging social achievement by some utility bases criterion on the other.

If economic growth were to be understood in this way and placed in a corresponding connection, the drive for innovation would be correspondingly profit-driven and the question of successful innovation would be answered solely by what yields a correspondingly large profit in monetary terms. Since a detailed critique with reference to innovation, in particular, would go beyond the scope of this article, I will limit myself below to central arguments.

Sen (2003, 2013), for example, points out that the prosperity of a society or nation cannot be measured solely in terms of GDP per person, and that the possible data here can, for example, differ greatly from that of life expectancy in a country. In addition, other factors of life can be cited that are not taken into account in such measurements, but which can play a significant role. A further example can be given by education (Sen, 2013, p. 63). Thus, prosperity does not depend exclusively on wealth as understood in the traditional sense, and this can be critically applied to the profitability of companies accordingly (Stiglitz et al., 2010). Furthermore, it is evident that even the ideal market (from which the real market often deviates) does not always lead to the best result based on pure competition alone. This can be illustrated by the example of the so-called tragedy of commends (North, 1981). Accordingly, the drive behind innovation cannot be geared to pure competition and the corresponding pressure on entrepreneurs who produce it. These factors are indirectly linked to a corresponding (instrumentalist) understanding. We can, therefore, summarise at this point that (a) the corporate structures in their traditional form do not necessarily promote innovation at all levels and areas and (b) the pure profit orientation of a company at this point falls far short of providing the possible drive and a basis of assessment for innovation along ML.

Innovation Quality as Guide to Better Understanding

In order to be able to answer the unresolved questions and possible problems within the core concept of innovation, it is now necessary to derive possible consequences from the previous arguments. One of the core theses of the article is to argue that the success of an innovation is measured by the society and the people themselves who benefit directly or indirectly from it. The term benefit, however, does not refer exclusively to a pure profitability but rather to the needs and preferences of the individuals or a group itself. At this point, various theoretical concepts can be used as a basis, which, however, will not be discussed further here for reasons of space. The question of preferences or needs should remain open and as broad as possible at this point, which also benefits a possible application of the concept of innovation itself. Alternative models, the classic

accounts, can be found, among others, in Doyal and Goth (1991) or Nussbaum (2011). These models sharpen and specify different basic goods. Even if this is not discussed further, a definition for a so-called successful innovation can be derived from the previous basis in connection of the core concept and the general problems of the understanding of innovation presented. In doing so, the definition and the concept of the so-called innovation quality will be used as a basis for a better and clearer understanding.

Within the critique presented, it was illuminated that there is a point of reverence for the measurement of innovations or their so-called quality. The question that remains open at this point is as follows: When is an innovation of quality successful? The answer to this question is indispensable if one wants to evaluate the success of an innovation and assess structures that are advantageous or disadvantageous in this respect, instead of relying purely on spontaneously emerging ideas. But how can such a reverence value be further determined at this point without defining concrete needs etc.? The pure drive of the economy's growth in terms of specific core variables was considered rather critical in this context (Chapter II). However, this criticism is not directed against growth in general, rather the focus here is on determining it in detail. The reference to Sen (2013) and Nussbaum (2011) made it clear that economic indicators on which the focus of a company is usually directed in detail do not necessarily reflect all the needs and preferences or even the quality of life of individuals (e.g., in a society or economy).

But how can the concept of possible preferences of individuals, a group or even a nation (wealth) be transferred to innovation without determining it in detail? Filling this gap does not seem to be primarily relevant at this point in order to be able to derive basic structures from it. Rather, it seems better for the understanding of the concept (also with regard to the possible free decision of individuals) to leave this scope open (see, e.g., Nida-Rümelin, 1992, 2009). A normative basis for assessing innovation must be correspondingly far-reaching and holistically formulated. To this end, the concept of innovation quality seems to be correspondingly helpful within the analysis (Faix et al., 2014). Within this approach, the quality of the innovation is measured indirectly via the society that it is intended to serve and, thus, its social context, and amounts to the degree of outcome quality (Faix et al., 2014, p. 79). The degree of quality is determined accordingly by the acceptance of the quality itself. By definition, innovation quality is then expressed (also and especially for the company) in the degree of a result in which the innovation initiates, secures and perpetuates social value creation (in the long term). Within the concept itself, reference is made to Maslow's pyramid of needs, but a corresponding extension of the concept allows it to be completely open in this respect due to its constitution.

A corresponding formulation of value creation must then be expanded in the following sense of the broad understanding of innovation quality: Value creation refers to (a) the entire society in which it takes place; and (b) thus, always specifically takes into account all those directly and indirectly affected in it. It is, therefore, about the real value in terms of quality of life and design (prosperity in all facets) that an innovation has for a society and the individuals directly or

indirectly affected by it (see also Faix, 2020, for a more precise definition of prosperity per se). Accordingly, a possible assessment standard for innovation can now be defined, and, thus, the quality of an innovation (or its being successful or good) can be determined. A definition for innovation quality (MIQ) can be given as follows:

MIQ: Innovation quality means the (a) creation of something radically new (creative destruction) that increases the value creation in a society; (b) and/or the individuals and (interest) groups directly or indirectly affected by it.

Value creation understood in this way encompasses all corresponding preferences and needs of individuals and groups as well as their prosperity and quality of life ('real-world definition'). This means the concept is not limited to the standard understanding of economy and the corresponding corporate tradition. It is probably difficult to formulate a standardised measure here, but corresponding approaches can already be found in part within the literature (see, for example, Tuomela [2013] for the basic discussion within decision theory). These can be transferred in a broader sense to companies. The conclusion for companies will now be analysed on the minimal given definition. On this basis, corporate structures towards innovation can be evaluated more accordingly.

Business Structures Towards Innovation

On the basis of the definition of innovation quality or successful innovation, possible structures that promote innovation can now be better and more clearly identified and determined. This is the case because in comparison to the pure definition of innovation itself or other approaches in this direction, a kind of assessment standard has now been introduced. The assessment standard can be related to different areas in the company and its relation and task within a society. In conclusion, I will now approach these structures in two areas. The first area concerns the structures in a company itself, that is the internal disposition of a company and the persons involved in it. An internal view is not sufficient, however, if innovation quality and the definition of innovation quality always refer to the society in which the company operates. Consequently, corresponding external references and structures must also be taken into account and defined as far reaching as possible.

Within the company, statements can now be derived primarily in relation to Chapter II, where the traditional current state was already briefly touched upon. The main focus at this point was on hierarchy structures and the general structure of the company (e.g., power and influence). So far, it has only been stated that rigid and one-dimensional top-down structures appear too rigid to promote innovation to the full extent possible. This can also be indirectly supported by innovation quality: If an innovation is related to the welfare of the society in the defined sense, new ideas in this direction can best be derived by the creative mass in a company at all levels and under all demands. Accordingly, not only the flattening of structures but the democratisation of the enterprise to the appropriate degree can be helpful (see, e.g., Gebhardt, 2011; Herzog, 2019; Ingram, 2019).

This includes not only pure participation and the breaking down of strict work structures but also the creation of an appropriate working atmosphere. For the creation of something new in this sense, it is necessary to generate a creative environment and, as a result, above all to allow mistakes, which are not punished accordingly but are to be discussed transparently and cooperatively. This also means promoting solutions and approaches that break out of the old familiar. Creative thinking here requires deliberation and reasons from each individual who is involved in the processes and takes part in the creative process itself.

In addition to the promotion of creativity and thus possible critical thinking, the company's goal or the possible innovation goal u itself is also central. The question that arises in relation to value creation is to what extent the company wants to pursue and implement this in which area and with which task (both variable to a certain degree)—that is which market, which product or service or which process does this concern and on what basis. In order for all those working within the company x (as amount of all employees in the company) to be able to think sufficiently creatively in this direction, it is not enough to limit oneself to a creative environment, creative promotion and the involvement of all. Rather, this kind of goal pursuit is needed to achieve the qualitative goal of innovation quality as a foundation on which everything else can be built. For this purpose, it is necessary (if all are to be equally involved in the sense of autonomy and cooperation) to base a kind of consensus u(x) on which they agree. Where u(x) describe the concensus to goal u of the amount of employees x. Such a consensus cannot be imposed from the top-down but it must be based on understanding, the adequate exchange of reasons and the cooperative agreement of all in order to adequately promote innovation in the sense of value creation. Cooperative agreement does not end with the pursuit of merely individual goals (such as a possible salary increase) but compromises towards a cooperative group goal that all can represent and understand is necessary. This also indirectly excludes micro-sabotage against u(x). On the basis of such identification and the cooperative, equal exchange, creative value-creating ideas and their implementation can be generated and advanced and correspond to the internal corporate dimension of the drive of innovation quality.

Furthermore, innovation quality also has consequences for the external structures of a company. Here, no consensus in the direct sense of u(x) is necessary, as this already includes the value creation itself, which concerns this sociality. However, this must also be communicated and lived transparently and communicatively in the sense of achieving the goal. Pure greenwashing or marketing seems to be inappropriate here (Jones, 2019). In order to be able to fulfil and represent this as a company to the outside world, it is first necessary to understand what value creation for society means in detail and how a mediating contribution can be made. Reasons must be comprehensible. This also means understanding who is directly or indirectly affected by one's own entrepreneurial activity in a positive or negative manner: In other words, not only which general quality of life I improve through a possible innovative product but also whether possible negative effects indirectly (e.g., in the supply chain) can be avoided or mitigated for those indirectly affected. In order to be able to generate value

creation within the company in the sense of sociality in a sustainably and long-term possible way, this also means living cooperative structures vis-à-vis possible competitors, seeking exchange towards value creation and cooperation (cooperative competition). This comes closer to the ideal market and promotes ideas and the drive to create value itself. A possible example can be the AMRO REAL Bank (see, e.g., Kimakowitz et al., 2011), which shows that a company can survive on this basis. In addition, society itself should also promote creativity in companies by allowing mistakes and illusions in order to allow and enable thinking in new directions.

Finally, it can be summarised that if one follows the argumentation of innovation quality, both internally and externally, a communicative and transparent consensus in the sense of cooperation towards value creation in a society forms the basis for innovation quality and corresponding corporate structures. This requires a constant exchange of reasons, as well as a constant rational debate and communication, but also the inclusion of appropriately involved individuals (internal and external). Furthermore, creativity needs to allow mistakes and the extensive inclusion of everyone (flattening or democratisation of hierarchical structures and cooperative competition towards the outside). All this gives common reasons towards the development and fulfilment a new goal x (on the basis of a consensus u(x)), which creates value in a society (and is, therefore, successful).

Conclusion

> For good ideas and true innovation, you need human interaction, conflict, argument, debate.
>
> —Hefferman (2021)

In the present article, it was made clear on the basis of a minimal definition of innovation and its possible problems that there is a lack of an appropriate assessment standard for a good innovation. This gap was attempted to be filled here in a first recourse by introducing the concept of innovation quality and expanding it accordingly. In doing so, no fixed reference to value creation was made in terms of content. The debate about a possible basis was left open in order to do justice to the debate here. Rather, this was seen as a variable, and it accordingly requires the formation and understanding of a constant consensus within the company and also in relation to the company's sociality. On this basis of innovation quality, structures were then derived accordingly that promote innovation successfully and in the long term. Along the literature, these also correspond, to a large extent, to the empirical data on this and are able to integrate them interpretatively.

Of course, many questions remain unanswered at this point. This is also due to the fact that the basis of a minimal definition was assumed. The concept would have to be examined and expanded in other dimensions, both theoretically and

empirically. In this respect, it is necessary to examine various definitions of innovation in order to make the preconditions and the argumentation of innovation really robust and to concretise innovation quality accordingly and to examine it in all its references (e.g., the underlying rejection of utilitarianism or consequentialism). But this can lead to a more precise formulation of its normative basis for society, the economy and, in particular, for the company (for the basis of the debate in the sense of rational action, see, among others Tuomela [2007, 2013] or also Nida-Rümelin [1997, 2001]). Despite these extended problems and open questions, the article here provides a first important outline and creates the basis for a possible practical corporate application based on this argumentation.

Acknowledgements

For useful constructive comments and suggestions, I am grateful to the anonymous reviewers; all remaining errors are mine.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author received no financial support for the research, authorship and/or publication of this article.

Notes

1. Pseudo-innovation refers to pure processes of improvement that relate to the evolution of technical means or products. They are merely partial optimisations of what already exists, and, therefore, we cannot speak of true innovation in the sense mentioned.
2. In the meantime, when the corporate structure is partially flattened, one also speaks of the so-called dual structure of a company.

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Article

India's Frugal Innovations: *Jugaad* and Unconventional Innovation Strategies

IMIB Journal of Innovation and Management
1(1) 25–45, 2023

DOI: 10.1177/ijim.221128071
jim.imibh.edu.in

Ruchi Sharma[1], Nandita Mishra[2] and Gauri Sharma[3]

Abstract

In recent years, many low-cost innovations, to solve the problems of economically weaker sections of the society has emerged, with the goal of bringing together enterprise and social welfare. In reality, all businesses were concerned that high quality and low price may cannibalise their own existence. Concurrently, the customers who were intended to be benefitted from the novel strategy, tend to evade the products, quoting, the quality of the products being inferior and talking about the social stigma of using low-cost goods or products.

The researchers by using different case studies have shown how the companies can effectively and successfully reduce the uncertainties of the market and technological challenges of low-cost products for price sensitive customers. After analyzing the case studies used in the article, it appears that the most important criteria to improve customer perceptions of quality and image is to keep the cost low and provide value for money. The case studies show that organisations that use the networks of open global innovation for the overall collaborative development at various stages of the value chain representing innovation are more likely to succeed with affordability-driven innovations.

Keywords

Frugal innovation (FI), global networks, low-cost product, bottom of the pyramid

[1] Institute of Marketing & Management, Business School, New Delhi, India

[2] Chetana's Institute of Management and Research, Mumbai, Maharashtra, India

[3] Symbiosis Law School, Hyderabad, Telangana, India

Corresponding author:
Ruchi Sharma, Institute of Marketing & Management Business School, Marketing Tower, B-11, Qutab Institutional Area, New Delhi, Delhi 110016, India.
E-mail: ruchisharma254@gmail.com

Introduction

Exchange of international communication and ideas increase as globalisation increases. Numerous businesses began to grow quickly, with some becoming multinational enterprises (MNEs) and, as a result of which, business competition and rivalry also increases. Innovation is required not because of competition alone but also because of the changing landscape of fast-growing technology and shifting trends in consumer behaviour. During the last two decades innovation trends have been different from traditional business strategies The worn-out strategies had to be replaced with new low-cost strategies and the shift was from developed to developing countries. Developing countries were regarded as a 'plan B' target in terms of innovation, but they began to emerge in the financial market, demonstrating potential for rapid economic growth. At the same time, new strategies had to take into account the challenges of emerging markets, like skilled labour, low levels of income, less developed infrastructures before developing the new method of innovation. The methods that were recently introduced to aim for the bottom of the pyramid are reverse, frugal, and *Jugaad* innovation. Ritter-Hayashi et al. (2018) stated that the process innovation suffers when businesses downsize. However, businesses can continue to be innovative amid downsizing thanks to labour adaptability.

Frugal innovations might include marketing strategies and organisational procedures in addition to commercial objects and services. The Punjab Police, for example, established the concept of 'mobile-cum-*naka* contingents' to free up resources linked to police pickets and barriers while battling an armed insurrection in the state in 1990, so providing an effective operational force with little added investment (Tiwari et al., 2017). Also, just because a product was created or built at a low price does not mean it is of bad quality. Instead, they are defined by their low cost and sturdiness, as well as the fact that they are primarily designed for a volume-driven market. Frugal innovation, sometimes known as frugal engineering, is the process of reducing non-essential features from products in order to sell them in developing countries, such as the Aakash tablet. The Indian government made this one-of-a-kind gadget affordable to all students in the country in order to provide them access to the digital world (Sharma, 2013). Le Bas (2020) provided a thorough explanation of FI as a technology paradigm and demonstrated about how FI may improve sustainable performance. Filho et al. (2021) connoted that innovation is a critical concern and component of sustainability, and it is regarded as a tactic that is used to facilitate sustainable development.

'The action or process of innovating' is the lexical-semantic of innovation. However, if innovation is defined as a means of business survival, it means more to businesses. Few innovation scholars have proposed the following definitions: 'about helping growth' (Greenhalgh & Rogers, 2010) and 'the process of making changes to something established by introducing something new that adds value to customers' (O'Sullivan & Dooley, 2008). The new strategies that were introduced to meet the target group in emerging markets, are the innovations embracing low cost of manufacturing and readily available resources in emerging markets (Govindarajan & Trimble, 2012). Therefore, to be sustainable, FIs should

take the entire value chain into account. The affordability of economical goods may also encourage higher consumption, which is another positive impact (Rosca et al. 2018).

Furthermore, emerging markets enable businesses to change their production plans in a more cost-effective manner. Because developing countries have limited input that is valued at a lower rate—technology, infrastructure, and skilled labour. They might easily change their production to produce at a lower cost to reflect this—this is thrifty and *Jugaad* innovation.

The challenge for businesses is to employ innovation to bring down prices to a level that economically disadvantaged people perceive to be reasonable. This is what we mean when we say 'frugal innovation'. Various ways have been taken to reach this goal. The Aravind Eye Hospital in India is a prime example. Every year, the hospital removes cataracts from over 200,000 people, with each treatment costing an average of $25. This dramatic cost reduction was accomplished by implementing process efficiency and obtaining higher output from doctors and nurses. In reality, the procedure is free for all impoverished individuals (60% of patients). This is made feasible by subsidising Aravind's costs, namely by charging other patients between $50 and $300, which is still a fraction of the amount charged by hospitals in Western nations (Mukerjee, 2012).

Economic, environmental and social considerations are significant in sustainable business practices, and their interaction affects how well they operate (Høgevold et al., 2019). Moreover, all businesses in emerging economies face some key challenges—low affordability and ability to pay, lack of proper infrastructure, limited access to health cases, low education and skill, high pollution levels, poor governance, weak legal-system and weak policies. In such an economic environment success necessitate stacking some or all hindrance. While a local firm like Tata in India may be aware of this, it is a new and inconvenient reality for giant multinational MNCs that have concentrated the majority of their resources and concentration on developed countries. These businesses must learn how to service clients with varying purchasing power and requirements. It has been stressed that successful examples such as Logitech in China and Samsung, Tata and GE Healthcare in India had a long and a strenuous path, but they all adopted a unique strategy for growth, by adopting a 'more with less, for more' strategy, otherwise known as frugal innovation. Cyrus Poonawalla, the founding father of the SIT, India, for example, 'got down to creating vaccines since there was a pressing necessity in a developing country like India'. Poonawalla, a former business student, undergone to study immune biology out of a desire to serve society, and is said to offer 'his vaccinations on a "no loss, no profit" premise in India' (Mahmood et al., 2014). Prime reasons why India has become a hotbed for frugal ideas appears to be the country's current socio-economic realities, which have spurred individuals to develop for social welfare.

Prahalad and Hart (2002) and Prahalad (2012) presented a new environment for innovation. The author identified innovation opportunities for markets at the bottom or base of the economic development pyramid in his articles, that is, BOP. According to presented data, the BOP includes 4 billion people living on less than $2 per day, representing many cultures, ethnic groupings, and needs and abilities.

So far, multinational firms have not regarded this market as a target consumer market. According to the World Resources Institute's (2007) research, this market is worth around $5 billion in purchasing power parity. The key challenge here is to adjust items to the market's needs. The work is difficult because the market is unorganised, divided into numerous segments, and fragmented. The BOP market can be defined as a collection of niche markets. It is impossible to create a product that meets the needs of all customers due to the large number of them. According to Prahalad, multinational firms concentrated on producing items for the top of the pyramid markets, which have already been identified in terms of customers and are simple to address through marketing channels. The BOP markets necessitate a completely different approach than the enterprise markets. As the customers on this market are diverse, such a strategy must be unique.

The critics were stern within their evaluations. Quite a few evaluations imply that, on the entrepreneurial part, there can be considerable obstructions impeding enterprises' ability to furnish to BOP market necessities due to inherent structural deficits. For example, as quoted by Karamchandani et al. (2011), that with a small number of exemptions in industries like FMCG, that is, consumer packaged goods, pharmaceuticals and telecommunications multinational firms 'have been largely unable to reduce prices and reduction enough to serve poor consumers'. One rationale for this challenge could be the minute scope of emerging markets as measured in the foreign exchange rates (Karnani, 2007). An additional reason may possibly be the alarm of 'cannibalising the existing market for expensive technology', which has been reported to plague several Western companies as connoted by *The Economist* (2012). In any case, Karnani's assessment associated with numerous circulated instances for BOP inventions might have the culmination of 'success stories of selling to the poor' are preferably 'isolated instances', several BOP items that were discovered were rated much superior than their unbranded competitors (Karnani, 2007, p. 96). It is proposed that just 'removing features from existing products in order to sell them cheaper in emerging markets' is considered as a failing strategy. The matured market items are unable to satisfy the unique requirement of the emerging market customers. even when the cost is stripped-down it is considered high in the BOP markets, with no scope for competitive pricing or profitability (Sehgal et al., 2010).

There have been successful examples of innovations driven by affordability model, in emerging economies that have gone on to achieve worldwide success, such as GE's 'Lullaby' baby warmer, which is now sold in 62 countries (Mahalakshmi, 2011), India's Mahindra & Mahindra's small-sized tractors, which are at this instant sold in the United States (*The Economist*, 2012), and the Algae heater developed in India. Such innovations have been coined to be described as 'frugal' for they focus on the basic and functional features and renounce all unnecessary features. The objective of reducing selling price and operational cost is impossible by foraying down features in the advanced products but rather build/start from scratch (Tiwari & Herstatt, 2012a). 'Frugal engineering is an overarching philosophy that enables a true "clean-sheet" approach to product development. Cost discipline is an intrinsic part of the process, but rather than simply cutting existing costs, frugal engineering seeks to avoid needless costs in the first place'.

As some MNCs and their associates in the developing countries have suggested, an interesting aspect of frugal innovation is that it frequently occupies the position in 'Open Global Innovation Networks' (OGINs) and commit to standard assurance and cost reduction as mentioned by Tiwari and Herstatt (2012a).

The argument above, uncovered an intriguing research gap: There is a research need to adopt a simple mindset for developing vey low-cost products without affecting the quality of the product. The most crucial frugal innovation is to begin with addressing the problem and not the product. Bhaduri and Talat (2020) explained one significant finding in their research, that was, FIs tend to be practical, user-driven, and problem-solving.

The mixed results of the traditional BOP approach, whilst a new trend concentrating on affordability is gaining traction and technology advancements with innovations appears to be successive in emerging markets. This article ascertains how businesses can handle market and to showcase that in product improvements aimed at price-sensitive customers, there is technological uncertainty. With respect to six case propositions selected on frugal innovations in India, three propositions will be formulated and explored for this goal.

The article is organised along the subsequent lines: The preamble of the concept as discussed above is followed by a conceptual framework for frugal innovations in the second section, and OGINs and its potential relationship with frugal innovations in the third section. The second and third section, lay the ground work for the review of literature and builds a foundation to substantiate cases, that are subsequently assessed in the fourth section through six case studies. The fifth section contains a discussion of the research and its ramifications. Finally, the sixth section has the concluding discussions.

The main objectives of this article are to study:

1. How organisations turn constraints into innovative ideas?
2. How frugal innovation is different from standard innovation in addressing the problems of the bottom of the pyramid?
3. How frugal innovation is the ability to generate more business and social value while significantly reducing the use of scarce resources?

Frugal Innovation: A Conceptual Foundation

Ingenious services and products which aim to reduce the amount of physical and economic resources used in entire value chain with a target of lowering ownership costs while meeting or exceeding some pre-defined quality benchmarks can be classified as frugal innovation (Tiwari & Herstatt, 2012a). Scholars have lately created an integrated understanding of FI that considers both commercial and technological aspects. Hossain (2016), for example, defined FI as 'a product, service, or solution that emerges despite financial, human, technological, and other resource constraints, and where the final outcome is less expensive than competitive offerings (if available), and which meets the needs of those customers who would otherwise go unserved'. Ploeg et al. (2021) stated that the firm-level

resource constraints have a significant impact on the firms. The firms adopt FI as a practical tactic to handle such kind of resource limitations. Another result suggested that a crucial driver is the relationship between firm-level and firm-environment performance. Hossain (2016) mentioned that the concept of FI incorporates concerns of cost, essential functioning, simplicity and servicing individuals by means of little financial resources. They define FI as a process of creating value for consumers with limited purchasing power by developing simple low-cost products.

The term 'FI' was coined in developing economies to address the demands of low-income customers by providing innovations with high quality and added value yet at a low cost. However, this may be compared to path-breaking innovation and the notion of 'disturbing the pyramid' in emerging markets, at the same time also concentrating on low-income or price-sensitive consumers in developed countries. It is also a business strategy that is an extension of *Jugaad* innovation for developing low-cost solutions to common issues (Hindocha et al., 2021).

The frugal innovations share a number of features with other terms in the similar category, though not all, as depicted in Figure 1 and explained thereafter.

FI can be disruptive (Christensen & Raynor, 2003), as well as structured. They tend to be disruptive as the business model is aimed at price conscious and unserved consumers (den Ouden, 2012). The global car makers concerted efforts to capture the market share of Maruti Suzuki in India. It made them feel that FI diverts customers from well-established firms to newer firms. The reason is different from perception, it is the cost-consciousness and affordability that makes

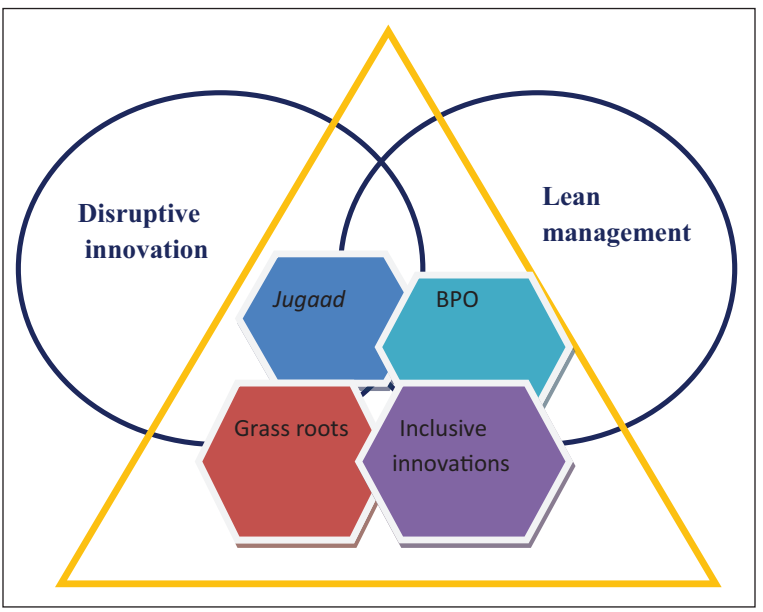

Figure 1. Context of Frugal Innovations.

it possible. Frugal innovations have long term impact on the business of a company, as demonstrated by the Tata Group and Maruti Suzuki in India. The innovations on the other hand, developed by Indian Space Research Organisation (ISRO) demonstrates that frugal innovations are structured and disciplined (Tiwari & Herstatt, 2012a, 2012b)

Sehested and Sonnenberg (2008) connoted that there are several characteristics common between frugal innovation and lean innovation, and which aims to use information more effectively and convert it into value more quickly. The objective of frugal innovation and lean innovation may differ. Lean innovation seeks to define, structure and prioritise value for specific innovation projects Schuh et al. (2011), whereas frugal innovation attempts to rationalise the value chain. The end result of lean innovation may not be a low-cost product like the frugal innovation but in both the types it takes much more than efficient management to create a game-changing disruptive innovation (Hindocha et al., 2021)

A global definition of FI has several semantic benefits, such as a unified understanding and approach—what it is, how it will operate, how it may be used, and what is required. Despite increased interest in and publications on FI, its application, and efficacy, there is still a lack of a full theoretical understanding of FI. To completely comprehend what FI is, a standardised strategy must be devised. It might be argued that FI has a political component because it diverts the focus away from underlying inequalities, injustices and from any country's socio-economic categorisation, resource allocation and geopolitical influence. FI's expansion and implementation were not hampered by the introduction of different definitions, rather, it increased interest in, understanding of, and market for the frugal innovations. Consolidation of the various definitions of FI, on the other hand, has the potential to significantly contribute to practice and research by establishing a reporting group consciously focused on FIs, measuring the impact of such innovations, developing a body of knowledge concerning FI, and building consensus on how such innovations can be reported in a standardised manner.

According to the findings, FI is a disruptive innovation for each of its target markets and has had a major impact on or change in those markets. Another verdict demonstrates that FI is focused on value chain operations, with the primary goals being cost reduction and the affordability of the good or service (Neumann et al., 2020). Cost reduction, functionality, and performance level are the three main parts in which frugal innovation occurs. Cost reduction consists of aspects like 'considerably lower initial cost or purchase price', 'reducing the total cost of ownership', and 'minimising the use of material and financial resources'. Core functionality includes features such as 'functional and focused on necessities', 'minimising the use of material and financial resources', and 'user-friendly and simple to use'. Lastly, with respect to performance level, Frugal innovation is characterised as 'simple to use', 'dependable', 'robust', 'high-end technology', 'quality maintenance', or 'meeting or exceeding certain set criteria of acceptable quality standards'. Simultaneously, low-cost innovation must satisfy extremely particular demands that are frequently unmet by mature-market items (Oliver Wyman Group, 2016).

Various concepts like, '*Jugaad*', 'grassroot innovation', 'bottom of the pyramid', can be compared to FI. It can be stated that frugal innovation has been the mechanism to integrate and bring these diverse concepts underneath one umbrella. To mention that FI are aimed at the foot of the layer, may not be correct. FI, strives to address the unfulfilled customer needs. The ability to reduce a high-quality product at a lower cost, despite of the infrastructural challenges is the value proposition of frugal innovation. The success of the FI products depends upon the ability of the potential customer to pay for the product (Tiwari & Herstatt, 2012a), the product in fact competes primarily in opposition to non-consumption. Further, the FI products or services must have sufficient volume to facilitate production despite its thin margin.

Frugal innovation differs from the conventional BOP because one main issue concerning BOP is the quality perception and brand image of the products. While firms are distressed that superior quality, low value products will disperse their general course of businesses, the buyers have in general behaved in a repudiated approach. The unnecessary publicity created by media for Tata Nano's development and launch, was washed away when Tata Nano's sales fall far short of the high expectations. On the basis of an estimation, the Nano got Tata Motors $220 million in global publicity. Yet, a report quoted a competitor car maker saying: 'Nobody wants to buy the world's cheapest car' [importance added]. Infact, when the Tata Group's cost-effective water filter, the Tata *Swach*, was launched, Ratan Tata, the company's CEO, acknowledged this challenge. Mr Tata was careful to emphasise during the launch that the goal was not to develop lower priced products, but to reach the greatest number of audience as mentioned in *Economic Times* in the year 2009. The Executive VC of INIF, Professor Anil Gupta, who worked extensively to encourage grassroots innovation, have been quoted saying—'people still feel that good technology still comes from abroad' (Malhotra, 2009), which demonstrates that prospective customers are concerned about quality, whether real or perceived.

According to various research, BOP buyers, despite their financial constraints, prefer sophisticated products that do not bear the connotation of being a poor person's item. In Asia, Africa, and Latin America, across the country, an examination of services and products marketed at BOP buyers ascertained that these are 'motivated not just by survival and physiological needs but seek to fulfil higher order needs, either to build social capital, for cultural reasons, or as a compensatory mechanism' have recommended that just 'stripped-down' variations of available products and technologies do not 'match the aspirations of the potential customers'. The accomplishment of the cost-effective MS's cars has been an outcome of their goodwill as 'good quality products for affordable price' as mentioned by Tiwari and Herstattin (2012b).

On the basis of analysis, its recommended to facilitate:

'Frugal innovations have a greater chance of commercial success if their value proposition incorporates the twin objectives of reducing the cost-of-ownership while matching customer aspirations for quality and image'.

Moreover, considering the latest application of frugal innovations, in India, there was a tremendous deal of collaboration between scientific institutes, the

government, and industry. Healthcare and medical infrastructure, education, everyday necessities, and the migration issue were all equally vital. Innovations flourished at this time of necessity. There are several reasons for the speedy reaction, including the exigency of the humanitarian situation and the government's practical approach to crowd accumulating ideas. This time, humanitarian needs were driving innovation rather than the urge for 'monetisation'. As a result, digital technology, communication, and cooperation organisations have become widely used to increase access to information and services. Among the technological advancements include the invention of ventilators, PPE kits, the Arogya Setu app, and so on. Thus, it is righteous to say that it is possible that FI was at its peak in India during the epidemic. There were little resources, limited time, and the current infrastructure was on the verge of collapsing (Ganesh et al., 2021).

Open Global Innovation Networks are Catalysts for Cost-effective Innovation

Some previous findings (Tiwari & Herstatt, 2012a, 2012b) suggest that one method to accomplish the identical objectives of providing excellent goods/products at a low cost of ownership is to make the best available utilisation of opportunities for 'open innovation' (cf. Chesbrough, 2006) on a worldwide level. 'As organisations attempt to advance their technology, open innovation is a mechanism that presupposes companies may and should utilise both internal and external plans, as well as internal and external links to market'. Open innovations are concerned with bringing external skills and knowledge into the organisation ('outside-in') and also with ascertain fresh revenue channels by providing us age rights of in-house development to other firms ('inside-out'), 'especially when the technology has future capabilities but it is not part of the organisation's core strategy' (OECD, 2008, p. 11). The initial definition of innovation was limited to company R&D, open innovation has evolved to include a wider range of disciplines and viewpoints (Gassmann et al., 2010).

Two of the 'new' streams that support open product transformation are proliferation of innovation and the context and aspects of FI. For example, during pandemic, it has been noticed that the institutions, wherever the government has aided ecosystems for the purpose of innovation as well as start-ups such as STIs—Science and Technology Incubators, were capable to take off first because the necessary resources and infrastructure were already in place. The IITs and IISc National Laboratories were well-motivated and well-equipped to develop in the appropriate domains. The partnership between the Government of India's Office of the Principal Scientific Advisor (PSA) and the Confederation of Indian Industry (CII) was outstanding. The PSA and CII offices were at the forefront of the development of technological progress, funding, and technology transfer. Through 190+ industrial and charitable relationships, opportunities worth more than ₹10 billion were created for 50+ institutions, primarily in agriculture, waste management, health and energy (Ganesh et al., 2021).

As a result, our second proposal is as follows:

'Companies can increase the probability of offering an attractive value proposition for successful frugal innovations if they are able to successfully connect their product development process with global innovation networks'.

Companies with the strategically planned goal of helping markets for low-cost innovations must hunt for admission to niche lead markets which are equipped through networks of open innovation. The best places to find frugal ideas are in lead markets. Development in parallel.

Individual businesses and entrepreneurs may continue to work in a decentralised fashion, but corporations and the product development activities in the formal sector should be focused on specific lead markets. Thus, it brings us to the final point:

'Building innovative potential in product-centred "lead markets" enhances the likelihood of identifying and gaining ingress to appropriate worldwide innovation web'.

Methodology

The research propositions are always regarded to be especially helpful with respect to ascertaining 'why' and 'how' features of enquiries, especially in the case of actual world phenomenon which is still in the procedure of emerging (Eisenhardt, 1989; Yin, 2003). The research involving many cases are always regarded as 'a powerful mean to create theory because they permit replication and extension among individual cases' (Eisenhardt, 1991, p. 620). Here, we will elaborate six different propositions based on FI in this section, with the exception of Tata Nano case (Tiwari & Herstatt, 2012a, 2012b). The cases have been chosen such that, in addition to providing insights into the three claims made above, they also meet some additional criterions. One of the main selection criterion, for example, is that the innovations in questions have already been commercialised and is deemed to have a good and improved social well-being ('greater good'). Second, they must have included some OGINs in their innovation processes at the very least. Third, they were chosen as a group to depict a broad range of industries, intra industry segment(s), and also entrepreneurial types as mentioned in Figure 2. For instance, the Tata Nano depicts the low-cost passenger vehicle segment, but the Tata Ace is a professional truck-driving vehicle segment, who were previously reliant on less safe three-wheeler goods' carriers.

EVMs are the result of collaboration between government establishments and state-driven public sector firms. The battery-run *Chotukool* refrigerator and the Tata *Swach* water filter, represent two unique cases of consumer goods, whereas Vortex's solar-automated ATMs are aimed at B2B buyers or business customers, such as banks. In addition, the cases allow for a wide range of variance in business size and functions. Although the two Tata Group companies are component of a

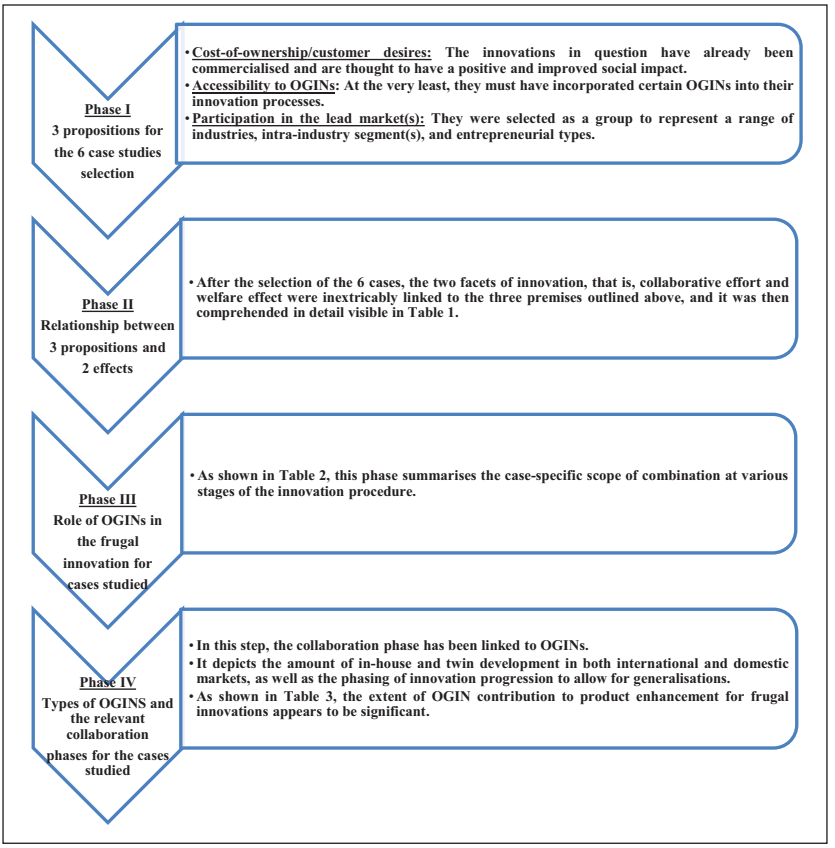

Figure 2. Research Framework.

big combination that operates on a worldwide scale, EVM manufacturers are sizable, public-sector companies having a domestic focal point (even if they export), and Vortex on the other hand is a medium sized company. It can be mentioned here that the entrepreneurs are thus motivated to change the unfavourable equilibrium he observes around him; he seeks a pleasant balance, and he does not stop by optimising the existing system with minor changes; instead, he seeks to devise a completely new solution to the problem (Chakraborty et al., 2021). The case studies have been condensed for space reasons, and they mainly focus on two aspects—collaborative effort and welfare effects in the creative process.

Discussion

These two facets of innovation (collaborative effort and welfare effect) are inextricably linked to the three premises outlined above as mentioned in Figure 2, and as comprehended below and in Table 1.

1. Reduced cost-of-ownership, when paired with consumer needs for image and quality, minimises possible customer resistance to innovation and raises the likelihood of effective dissemination (Ram & Sheth, 1989). Synergies amid diverse players from diverse technology and business areas can be used to achieve a favourable value proposition.

2. For 'technology fusion', the access to OGINs might be considered helpful (Kodama,1992) or product analogies which can help to reduce the product development cost and increase the product affordability. The welfare effect of inventions as a result, would be strengthened. By definition, the OGINs represents collaborative efforts and reduce the uncertainties of the market and technology in product development by leveraging a broad and shared knowledge base as well as established technologies in the partners' portfolios.

3. A large base of domestic demand comes from the lead markets which are well-priced and cost-effective (Beise, 2004). They can aid in lowering the production costs, allowing for more affordability for customers with limited resources. Lead markets are characterised by a large degree of aggregation of businesses and supportive industries quoted by Porter (1990). The probability of forming collaborations is increased by the lower presence of qualified potential partners.

Table 1. Shows the Relationship Between the Three Propositions and These Two Effects.

	Proposal I	Proposal II	Proposal III
Case Study—Aspects	Cost-of-Ownership/ Customer Desires	Accessibility to OGINs	Participation in the Lead Market(s)
A	B	C	D
Welfare-effect	A good value proposal enhances the likelihood of production acceptance and dispersal.	To create cost-effective solutions, use 'technology fusion' and analogies.	Economies of scale (cost-reduction) can be achieved by lead markets as they have a large demand size.
Collaborative-effect	By leveraging mutual synergies, a favourable value proposition can be achieved.	OGINs aid in the decline of technological and market uncertainty.	Access to OGINs is made possible by a larger concentration of supporting industries and enterprises.

Table 2. A Summary Showing the Role of OGINs in the Frugal Innovation—Cases Studied.

Case	A	Tata Nano (Case-I)	Tata Ace (Case-II)	Electronic Voting Machines (EVMs) (Case-III)	*Chotukool* Refrigerators (Case-IV)	Tata *Swach* (Case-V)	Vortex ATMs (Case-VI)
Inception—stage I	B	The idea generating process for developing target specifications involves more than 600 car component suppliers. Suppliers of 2-wheeler components are also included in order to find and leverage analogies and synergies.	More than 4,000 probable buyers took part in a way to better comprehend and contextualise the necessities for any disrupting product.	The proposal was started by the Electronic Commission of India (ECT).	Idea development in collaboration with Innosight, an innovation consulting firm co-founded by Professor Clayton M. Christensen (a renowned proponent of 'disruptive innovations') ethnographic research in rural households	Titan Industries and Tata Research Development and Design Centre (TRDDC) collaborated on idea generation.	The Indian Institute of Technology Madras has launched an incubation project (IIT-M)
Execution—stage II	C	Italy's furnished final clarification to the design. More than 50% of the elements were considered as exclusive parts created by suppliers by themselves. The suppliers of global and domestic origin such as Continental, Bosch, Tata, Dens, Sona Group, Johnson Controls Automotive contributed radical innovations from their own businesses	Alternative Fuel Systems Inc. (AFS) of Canada was contracted to outsource 81.5% of the content to 120 suppliers with specialised TML Gas injection technology training for production and design requirements.	ECI collaborated with Electronics Corporation of India Ltd. (ECIL) on developing the prototype. Bharat Electronics Ltd. (BEL) and ECIL worked together on joint product development	Employs 'thermos electric cooling', a skill developed by Jean-Charles Peltier, a French citizen in the first half of the 19th century	Design directions are created by an external partner. TCS and Titan Industries the two independent Tata Group companies, collaborated on the project.	Collaboration with IIT-M to develop technologies for dealing with spoiled currency notes

(Table 2 continued)

(Table 2 continued)

Case	A	Tata Nano (Case-I)	Tata Ace (Case-II)	Electronic Voting Machines (EVMs) (Case-III)	*Chotukool* Refrigerators (Case-IV)	Tata *Swach* (Case-V)	Vortex ATMs (Case-VI)
Commercialisation—stage III	D	To save logistics and inventory expenses, major suppliers should be located in the same location as the plant.	Establishment of 300 a fresh 'lean' distribution points solely concentrated on sales and extending the complex network of stockholders throughout free training for mechanics of the rural areas	The Goverment of India, particularly ECI, is actively encouraging the use of EVMs in further allied nations as a measure to strengthen the democracy aspect.	To develop the web of stakeholder (and create a new source of earning/income in rural and semi-urban places), villagers and social entrepreneurs distributed them in partnership with the Indian Postal Department.	Possibility of making an online buying for delivery across India, as well as access to the Tata Group's enormous retail network, and support from NGOs that engage in social welfare activities and provide free water filters to someone in need.	The World Bank Group and the Tata Capital Innovations Fund provided funding in collaboration with the WIZZIT Bank of South Africa

Summarisation of the Case Studies

After describing six successful Indian frugal innovations, regarding the intended 'collaborative effect' and the 'welfare effort', to begin, Table 2 summarises the case-particular scope of combination at various stages of the innovation procedure. The collaboration phase will be correlated to OGINs in a subsequent step.

These insights especially related to the cases, have now been in Table 3, that depicts the amount of in-house and the twin development in both international and the domestic markets, as well as the phasing for the progression of innovation to allow for generalisations.

The extent of OGIN contribution in the product enhancement for the frugal innovations appears to be significant, as evidenced by Table 3. Despite the fact that the propositions were chosen for having some aspects of collaboration, the scope of true co-operation, as measured through the participation of external partners in the diverse stages of the creative procedure, is rather considerable. The home base included the highest level of development activity. The firm's internal R&D capabilities and national collaborative partners (domestic-owned as well as MNC-affiliated) were the most imperative sources of ideas/thoughts, execution and also commercialisation, showing that in such a market, local competencies are required. 'Domestic in-house development' (column-b) and 'domestic collaborative development' (DCD) (column-d) were the most common types of product development. It is observed that in the case of DCD, the partners might

Table 3. Types of OGINS and the Relevant Collaboration Phases.

Product Innovation	In-house Development		Collaborative Development	
	Closed-Model	Open Global Innovation Network (OGIN)		
	Domestic	Offshore	Domestic	Offshore
(a)	(b)	(c)	(d)	(e)
Case I: Tata Nano	Inception Execution Commercialisation	Inception Execution	Inception Execution Commercialisation	Execution
Case II: Tata Ace	Inception Execution Commercialisation		Inception Execution Commercialisation	Execution Commercialisation
Case III: EVM	Inception Execution Commercialisation		Inception Execution Commercialisation	
Case IV: *Chotukool*	Inception Execution Commercialisation		Inception Execution Commercialisation	Inception Execution
Case V: Tata *Swach*	Inception Execution Commercialisation	Inception Execution	Inception Execution Commercialisation	Inception Execution
Case VI: Vortex ATMs	Inception Execution Commercialisation		Inception Execution Commercialisation	Commercialisation

be, and frequently are, MNC partners. The Tata Nano, for example, was developed and executed in part by Indian subsidiaries of German manufacturer Bosch. The contribution of 'off shore collaborative development' in frugal inventions was discovered in five of the six problems, though to various degrees. Their cooperation appears to have been requested most frequently during the execution phase (four times out of five). In the cases discussed here, 'off shore in-house development' (OID) was determined to be the less common kind of OGINs. Only Tata Group companies be determined to have in-house capabilities of development at offshore sites. The only product in the study that did not entail off shoring cooperation was EVMs.

Implications of the Discussion

Examinations of Propositions

At this juncture we will scrutinise the facts given by the propositions in relation to the three affirmations developed in the two sections, that is, second and third.

Value Proposition—Its Role

The report's goal is to map and analyse recent movements inside India's research and innovation industry. It accomplishes this goal with an impressive economy of words and a wealth of information from a range of sources, both domestic and foreign. Particularly noteworthy is the way the data is presented, both in tables and in figures created with the aid of a visualisation expert. More than 320 end notes are included. One won't miss anything if they quickly read the executive summary, introduction, findings, and suggestions. The study examines the laws, organisations, and sectors promoting research and innovation in India. The culture of inventive improvisation, skill in business model innovation, and new sources of social funding that define India's thrifty innovation are vividly shown for the reader. Additionally, the writers did not exclude any problems that need be fixed. The report calls for frugal innovation to become a strategic focus for collaboration between India and the UK. This is because of India's propensity for frugal innovation, which the authors believe would be ideal for Britain and other advanced countries that are going through a phase of lackluster growth and public austerity and are facing severe competition from emerging markets. The welfare effect was definitely strengthened by these which states that the affordability of products help to develop the basic living quality of the customers. The Tata Nano serves as an excellent illustration of this principle. The complicity of well-structured and well-known component suppliers like Bosch, with a pas of German automotive type of engineering, might aid Tata not only in terms of actual vehicle quality but may also aid in terms of promised quality. In turn, Bosch hoped to gain beneficial outcomes in frugal engineering whilst also pursuing the strategic goal of capturing a relevant market position that could have been occupied by a contender and then utilised as a launch pad in well developed markets like Germany as quoted by Palepu et al. (2011). Moreover, it also demonstrates how

collaboration can assist OGIN partners in utilising mutual and common synergies. Even the Tata Nano's initial set back supports this reasoning. The customer opinion on quality flaws and the stigma of driving a 'cheap' vehicle caused the early set back. TML could quickly quell the worries with transparent investigations consisting of independent international forensic expert. The Tatas, on the other hand, had to learn a key marketing lesson: the innovative, creative facets and global-standard quality hall be highlighted rather than the emphasising on the cost savings or reductions aspects.

OGINs for Frugal Innovations—Its Importance

The second statement, that firms can increase their chances of providing the proper unique and value proposition by successfully integrating their product enhancement procedure into open global ingenious networks, is likewise supported by several instances. The utility of present technologies (Kalogerakis et al., 2010) was emphasised (in all cases) to prevent avoidable expenses and keep the focus on affordability of the product. All of the preceding instances are the result of joint growth in OGINs that span firm and, in few cases, domestic boundaries. Using developed, external skills helps to get opportunity to know-how and improves quality, perception and image of the product .This notion is applied by the collaborative development of Vortex ATMs, which was already shown by the example of the Tata Nano. The presence of the renowned IIT-M functions as a safeguard to potential buyers in banks, which historically act in a much of a conservative approach with respect to the adoption of new technology due to high safety concerns. Many potential voters and political activists have been reassured by the collaboration of two well-known public-sector firm and India's Election Commission. The cases also appear to back up the link between OGINs and their share to the decrease of market and technology uncertainty that was caused from the communal effort.

Lead Markets—Engagement

A lead market should idyllically have an outsized amount of consumers with similar socio-economic and/or geographic situations that can be compared with numerous others in other regions of the globe (Beise, 2004). The resulting scale economies aid in lowering costs and increasing the welfare effect of thrifty inventions. The above all cases it can be observed that, as a key market for frugal innovations, India delivered significant scale economies to the pioneering businesses.

Concurrently, the serious consolidation of domestic-based collaborative partners who are nationally bought or MNC-affiliated, in the metamorphosis procedures of frugal innovators braced the proposal that establishing transformation potentials in product-centred lead markets may enhance the chances of identifying and accessing suitable OGINs. Moreover, statistics on foreign automation alliances, as well as royalty remitments and receipts, show that India is becoming increasingly capable of gaining opportunities to enter the area of OGINs. India has seen a considerable inflow in FDI for the purpose of developing local R&D proficiency .Despite the lack of factual data with respect to the amount of FDI

whose major objective was to perform R&D in India, the RBI conducts a prototypical examination of audited annual books of accounts filed by a sample of FDI enterprises, with the sample size and contributors varying over time.

Conclusions

The findings of the present research shows that in archetype of developing 'low-cost' transformations to ascertain latest revenue streams remains valid, a significant re-alignment is required. Purely cost-driven improvements aimed at 'the poorest of the poor' which appeared to fail to meet all of the high expectations placed on them thus far. In instances, social blot clubbed with purely functional and 'cheap' products have developed (in some cases, an imaginary) perceptions of poor quality in the opinions of those who shall be the intended beneficiaries, most of the firms have been competing hard to provide great quality products at defensible prices due to the insufficiency with respect to consumers' real purchasing power at the market exchange rates in the disintegrated retail.

It is obvious that the traits and features of frugal innovation are dependent on the target markets, which have varying demands and local or confined situations. As a result, the characteristics of frugal innovation might differ widely. As a result, frugal innovation includes much more than merely developing a cheaper version of an established product. It necessitates a completely new approach, one that involves digging deep to understand the true needs of bottom-of-the-pyramid customers, identifying gaps that can be turned into opportunities, and rethinking the company's organisational structure and how it delivers goods or services (solutions) on a large scale.

Despite increased interest and attempts to comprehend, create, and develop frugal innovations with the goal of efficiently alleviating issues, there still remains the challenge of conceptualising and characterising such frugal innovations because of its extensive overlap with other types of innovation. However, this might be owing to the varying definitions of other terms included in the definition of FI, such as sustainability, low income, and adequate. Defining FI as a concept must not distract from its primary goal. To identify a FI might be easier if it is compared against any existing alternative rather than any ill-defined idea. Therefore, it states that there is a significance in having a shared knowledge and understanding of frugal innovation (FI) in order to assist initiatives for its worldwide adoption and dissemination.

The examination of six fairly doing well low-end-driven product innovations ('frugal innovations') from several enterprises and businesses show that adopting a collaborative development procedure in open global innovation networks can enhance the probability of commercial success. Such networks enable enterprises to gain opportunities to new and present technologies, synchronise fresh ideas, and overcome the hindrances of a disintegrated customer base by joining forces. A promising remedy is to create products which are not of necessity aimed at 'the poor', but relatively at price-conscious customers who, by their wish or otherwise,

buy products that minimises the cost of ownership while also meeting their ambitions for individual and family well-being, economic advancement, and social acknowledgement. Also, COVID-19 highlighted the inventive spirit of the country's young researchers and innovators. A collaborative approach provided quick solutions with clarity on demands and directions for innovation. It also proved that industry intends to encourage indigenous inventions and has the capacity to scale up for a specific goal. If the government provides critical technological demands from each line ministry, a collaborative strategy coordinated by PSA and CII with business and academics be able to allow inexpensive and deep science discoveries with limited resources. Adopting strategies that enable rapid innovation in crucial areas with little resources will eventually lead to advancement and high-end technological growth.

As a result, there is a need to revise the mindset which experiences more at ease when developing the high-quality materials and products and after that stripping them downward for the impoverished. We thus, necessitate a contemporary style of thinking which will create appealing, well-developed items which shall be made accessible in basic variations and 'stripped up' to compeer the expectations of customers on an individual basis based on their readiness to spend. OGINs can play a critical role in enacting this paradigm shift by leveraging their expertise, resources, and access to market for multiple customer divisions.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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Article

Review of Adoption Theories in the Context of Blockchain

IMIB Journal of Innovation and Management
1(1) 46–57, 2023

DOI: 10.1177/ijim.221085415
jim.imibh.edu.in

Aman Dua[1]

Abstract

Blockchain is an emerging technology, showing possibilities in many fields. It has provided its mark in finance with cryptocurrency. Its security, robustness, interoperability and reliability have promised application in various areas, but the demonstrated use of blockchain technology is rare. The stakeholders are in the process of decision-making about the adoption of blockchain and assimilating with this new technology. This article discusses blockchain technology adoption with theories that were formed on adoption, infusions and assimilation of technologies by firms and individuals.

Blockchain technology will be adopted by firms, but most of the theories of adoption have been developed around individuals. Therefore, an assumption has been made that the premise for the firm will be the same as the premise for individuals, in the context of blockchain. Various firms, and the Indian government, are in the process of decision-making regarding blockchain. This article delivers explanations of constructs of different theories in the context of blockchain technology. This explanation will help practitioners to understand and analyse the adoption of blockchain technology in the context of their industry practice, and for academicians, it will act as the base to develop measurement tools for different assessments in the blockchain.

Keywords

Blockchain management, blockchain adoption, technology adoption, technology assimilation, adoption theories

[1] Department of Food Business Management and Entrepreneurship Development, National Institute of Food Technology Entrepreneurship and Management, Sonepat, Haryana, India

Corresponding author:
Aman Dua, Department of Food Business Management and Entrepreneurship Development, National Institute of Food Technology Entrepreneurship and Management, Plot No. 97, Sector 56, HSIIDC Industrial Estate, Kundli, Sonepat, Haryana 131028, India.
E-mail: om.amandua@gmail.com

Introduction

The initial 40 years of the Internet provided us with email, the world wide web, social media and mobile Internet, big data and cloud computing. These provided great support in the reduction of cost, collaboration and parallel thinking across industry and governance. The upcoming transition of the Internet in the form of blockchain, which is essentially a database, can be replicated in the words of Tapscott and Tapscott (2018, p. 6):

> Rather than internet of information, it is the internet of value. It's also a platform for everyone to know what is true—at least with regard to a structured recorded information. At its most basic, it's an open source code: anyone can download for free, run it and use it to develop new tools for managing transactions online. As such it holds the potential for unleashing countless new applications and as yet unrealized capabilities that have the potential to transform many things.

Blockchain has the potential to enhance value industries such as finance and supply chain much larger than conventional software, but not limited only to these. The decision-makers, from different industries, are getting aware of blockchain technology and in the background making decisions regarding blockchain adoption. The use of any technology is controlled by behaviour and attitude towards that. Different theories are given by various researchers in this context: for example, Theory of Reasoned Action by Fishbein and Ajzen (1977), Technology Adoption Model by Davis (1989), Technology Adoption Model II by Venkatesh and Davis (2000) and Motivation Model by Davis et al. (1992). These theories were formulated and established in regard to the psychological behaviour of individuals or in the context of the use of information technology (IT)-related issues by firms or individuals. Zhu and Kraemer (2005) mentioned that the theories need to be re-examined with the maturity of different markets, level of industrialisation and extent of industry barriers. Blockchain is currently in the nascent stage, but it promises to affect different facets of business at the firm level as well as at the industry level. Therefore, to provide a theoretical understanding and a base to develop the roadmap for an industry, this article explains the different constructs used in different theories in the context of blockchain and provides a taxonomy of theories on the basis of exogenous constructs that are used. The next section provides the introduction to blockchain, and the third section explains the theories and constructs in the context of blockchain. The fourth and fifth sections provide discussion and conclusion, respectively.

Blockchain

Databases are used every day, and blockchain is essentially a database. Blockchain is an open distributed ledger that is able to efficiently record transactions between two parties in a verifiable and permanent way (Iansiti & Lakhani, 2017). The parties here refer to organisations or systems that participate in the network for

reading or updating the data. The elaborated databases may include a list of students, patients and citizens. Databases had played and still continue to play an important role in the implementation of computers. In a globalised world, databases are shared because different people need to access the same data. In shared databases, issues arise on trust, identity, permission, duplicity and dispute settlement mechanism. Blockchain platforms are used for generalised and distributed value exchange. It is a decentralised state transition machine that manages the life cycle of digitalised assets and immutably records operations in a distributed ledger (Gartner, 2021). The Blockchain platform is a greenhouse structure that can produce new ideas, mutually support with essential resources and distribute the output on a larger scale. A blockchain platform may be described as a piece of land with different ownership.

Review of Blockchain Adoption with Theories

Blockchain has been identified as an important research area by the Ministry of Electronics and Information Technology (MeitY), and it finds its potential in several domains such as governance, network security and finance. As a pilot project, blockchain had been used for property registration in Shamshabad district in Telangana. Around 45 potential areas had been identified by MeitY (Government of India, 2021). The report by the Government of India (2021) suggested that a national blockchain infrastructure should be developed. There is the requirement for interoperability across different blockchain platforms and blockchain would support the creation of intellectual property on these. Blockchain technology has the potential towards development of unified standards across the globe.

The possible factors and issues which may affect blockchain decision-making in the Indian setting are analysed in the context of 10 theories: (a) Diffusion of Innovation Theory; (b) Theory of Reasoned Action; (c) Theory of Planned Behaviour; (d) Social Cognitive Theory; (e) Technical Adoption Model; (f) Extended Technology Adoption Model; (g) Motivation Model; (h) The Model of PC (personal computer) Utilisation; (i) Unified Theory of Acceptance and Use of Technology; (j) Model of Acceptance with Peer Support.

Diffusion of Innovation Theory (Rogers & Cartano, 1962)

According to this theory, the start or spread of a novel idea in any society depends upon four factors, namely innovation, communication channel, time and social system. The stages of diffusion are knowledge, persuasion, decision, implementation and confirmation (Rogers, 2004). The diffusion of innovation starts from the initial awareness and knowledge. The awareness about innovation at the starting point is related to the identification and prioritisation of needs and problems and locating the points where this innovation can provide potential solutions to these needs and problems. To an extent, this innovation can provide the solution to a problem,

which will affect the decision to adopt the innovation. This theory categorises a potential user into five categories, namely innovators, early adopters, early majority, late majority and laggards (Meyer & Goes, 1988). A novel idea may get into the arena with zeal and may enjoy fast reorganisation, but it still may find a delay in adoptions. In the context of diffusion of innovation, the author emphasises that the adoption does not always result in widespread of technology by the firm. The same is possible with blockchain technology also. Assimilation gap is lag between widespread usage and adoption (Fichman & Kemerer, 1997). The innovators are the first ones to try the innovation, and these are the leaders who adopt a proven innovation, and their adoption affects the social behaviour of others. The early majority category follows the early adopters, and they are the ones who need to confirm the demonstration of effectiveness. The late majority category is usually sceptical of change, and they tend to adopt the innovation by compulsion forced by the environment. Laggards are the hardest to convince, and they adopt the innovation when intense pressure from circumstances appears. If the analogy with the diffusion of innovation is followed, the percolation of blockchain by firms is supported by innovation, productivity and competitive edge possibility. Communication in the context of blockchain will be the awareness of its benefits and potential. The structure of the social system is the nature of the firms involved in it. The financial technology industries will be fast to adopt it. The innovator category decision-makers may be from the banking industry. The early adopter may be from the supply chain industry, and the early majority may be from the governance and EdTech companies, and late majority and laggards may include members from the manufacturing and commodity sector.

Theory of Reasoned Action (By Fishbein & Ajzen, 1977)

It is one of the basic theories with roots in societal behaviour. As per the Theory of Reasoned Action, an individual's attitude towards behaviour is driven by behavioural intention, and behavioural intention is jointly controlled by attitude towards behaviour and subjective norms (Fishbein, 1979). The theory used various situations in literature to predict behaviour and defined attitude is the amount of belief that adoption and application of new technology or action gained by evaluation Fishbein and Ajzen (1977). Subjective norms include the influence of people in the social environment of an individual on behavioural intention. Behavioural intention precedes the actual behaviour and is used in many theories. In the context of the Theory of Reasoned Action, it is the function of attitude and subjective norms.

For Blockchain, the attitude of a firm will be driven by its evaluation of the belief that blockchain can provide solutions, and subjective norms will include the influence of productivity that is achieved by other industries and competitors, although weighted by the evaluation of decision-makers of the firm. Behavioural intention will be an action of top management to discuss blockchain in the strategic meetings and making team for research and development. This theory provides the basis for different theories that are mentioned ahead.

Theory of Planned Behaviour (By Ajzen, 1991)

This theory is an extension of the Theory of Reasoned Action. In the Theory of Planned Behaviour (Ajzen, 1991), an additional construct 'perceived behaviour control' is added to the theory of rational behaviour by Fishbein and Ajzen (1977). This construct refers to perceived ease or difficulty in executing the behaviour of interest and is affected by self-efficacy. The perceived behaviour control is taken from the self-efficacy theory given by Bandura (1986) and is defined as 'the judgment of how well one can execute the courses of action required to deal with prospective situations'.

The perceived behaviour control in the context of blockchain will be the firm's capability to achieve the desired objective by action or decision made for blockchain. It will be affected by the firm's harmony with technology.

Social Cognitive Theory (By Bandura, 1986)

It states that there is a triad of social factors, cognitive or personal factors and behaviour or personality. It states that with these factors, people observe the sequence, and depending upon the outcome, punishment or reward, the choice to replicate the behaviour is made (Bandura, 1986). This theory was established in the context of human agency and human capability, which states that humans are self-developing and that they acquire knowledge by symbolic and direct factors. The personal factors include goals of self-evaluation self-efficacy, social comparison and values; the environmental factors include social model, feedback, standards and rewards; and the behavioural factors include the choice of action, effort to learn, continuity of use and achievement by using.

For blockchain technology, personal factors will include the technical evaluation of the firm in terms of efficiency and comparison to industry standards, environmental factors will include feedback from value chain partners or customers to adopt it and behavioural factors, as a result, will include the decision about adoption, the consistency of effort and achievement of the desired objective by using blockchain technology.

Technical Adoption Model (By F. A. Davis, 1989)

It is a relatively simple model in terms of the number of constructs that are used. It suggests that the behavioural intention to use a technology that affects the actual use is affected by two constructs, namely perceived behaviour and perceived ease of use (Davis, 1989). The original setting of this theory was a test for the adoption of email services.

Perceived usefulness for blockchain will be interoperability, potential to provide a strategic advantage to the firm. Blockchain had proved its utility in financial transactions, but around operation issues, it has yet to prove itself. The perceived ease of use will include the comfort of a firm with technology and the capability to sustain the change or adoption of blockchain technology.

Extended TAM2 Model (Venkatesh & Davis, 2000)

This theory was given by Venkatesh and Davis (2000) and extends the earlier mentioned technology adoption model. It adds some more constructs to the usage behaviour prediction of technology. This model was established and tested in a three-stage testing—before implementation, post one month of implementation and three months post-implementation. The constructs added in the previous model were voluntariness, experience, subjective norms, image, job relevance, output quality and result demonstrability. These affect, either or both, perceived usefulness and intention to use.

For blockchain, voluntariness will be the strategic willpower to adopt its feature. It may be the affinity of the firm towards trust, transparency, robustness of the system and interoperability. Experience will imply prior feel in the context of the adoption of earlier information technologies. Subjective norms will be the same as explained earlier, and the image will be the perception among clients and customers for the remaining updates on technology. Job relevance will be harmony with the industry. Output quality and result demonstrability will mean the trust that blockchain can provide the envisaged output on the operational and financial front for the firm. The additional constructs indicate the social influence process and cognitive instrumental processes. Social influence processes will include subjective norms, voluntariness and image, and cognitive instrumental processes will include job relevance, output quality and result demonstrability. The construct may be reflective or formative depending upon the situation.

Motivation Model (By Davis et al., 1992)

The motivation model rests on intrinsic and extrinsic motivations. It states that the behaviour of the user is determined by extrinsic and intrinsic motivation. The extrinsic motivation is different from the activity itself and maybe from perceived usefulness and/or perceived ease of use for technology (Davis et al., 1992). The intrinsic motivation stems from internal satisfaction and pleasure, and for computers, Davis et al. (1992) defined it as happiness an individual gets by using a computer.

For blockchain, the external motivation for blockchain technology will be peer pressure, regulations, need of the industry and requirements from customers. The intrinsic motivation for any firm would be innovation, competitive edge and value creation.

The Model of PC Utilisation (By Thompson et al., 1991)

This model has the 'Theory of Human Behaviour' as its foundation, given by Triandis (1977). It states that moral belief influences behaviour, but this impact is moderated by emotional drivers and cognitive limitations. The Model of PC Utilisation by Thompson et al. (1991) stated that six determinants affect the usage

of personal computers. These are job-fit, complexity, long-term consequences, effect towards use, social factor and facilitating conditions.

The job-fit implies the belief that the adoption of computers will enhance the performance of the job, and complexity refers to the difficulty level associated with regular use. Long-term consequences refer to the outcomes that computers will provide in the future, and the effect towards use is the feeling of pleasure or hate associated with the adoption of a particular action. Social factor implies the internalisation of an individual's s reference group for the associated action; here computer usage. In the context of computers, it refers to the workplace only. Facilitating conditions refer to the supportive environment in an organisation for any change in behaviour that is required.

Blockchain technology is not mandatory to use; therefore, the theory of the Model of PC Utilisation is more appropriate because this theory was also created in a setting where the use of PC was not mandatory in the organisation. The job-fit factor for blockchain implies productivity or any desired objective, and complexity implies possible challenges that will emerge during or after the adoption of blockchain. The long-term consequences imply the gain which the blockchain may provide in near future, and the effect towards use implies an improvement in brand image. The social factors include the adoption of blockchain by peers, and the need and urgency to adoption, and facilitating conditions include support by regulating authorities and associations in the adoption of blockchain.

Unified Theory of Acceptance and Use of Technology (By Venkatesh et al., 2003)

This theory is very comprehensive and is mentioned in Venkatesh et al. (2003). It rests on the base of eight earlier established theories. It was intended to act as a comprehensive model. Venkatesh et al. (2003) explained 70% of variance in the behaviour of adoption, while others explained 30%–40% of the variance for the same. It describes four constructs on the use of technology, namely performance expectancy, effort expectancy, social influence and facilitating conditions. Performance expectancy describes the degree of belief of an individual which considers that technology will be able to provide him with gain, and effort expectancy describes the ease of use in using the technology. Social influence describes the degree to which an individual believes that society and his/her peers believe that he/she should use the system. Facilitating conditions represent the degree to which an individual believes that sufficient infrastructure exists, and support is available to use this innovation.

In the context of blockchain, performance expectancy will be the confidence that blockchain adoption will gain the objective for which the stakeholders have adopted it. The effort expectancy will imply confidence that the firm will be able to manage and utilise blockchain effectively. Social influence, in the context of blockchain, is peer pressure which a firm experiences and confirms is necessary. The facilitating conditions for blockchain will imply the availability of service providers who assist and/or guide towards blockchain transformation.

Model of Acceptance with Peer Support (MAPS) (By Sykes et al., 2009)

The model is one of the comprehensive models, and it used seven constructs, namely behavioural intention, system use, facilitating conditions, network density, network centrality, value network centrality and valued network density. This theory states that an individual's social network with the employees of an organisation impacts the acceptance of the technology. For this theory, Sykes et al. (2009) mentioned two types of social connections between employees and others in the context of behaviour for use of technology. One is to get help from other employees, and another is to provide help to other employees. This first type is called 'get help' and the second is called 'give help'. These are extended as value network centrality and valued network density. The value network centrality implies the perception of control by a focal employee on system-related resources, and value network density refers to the connectivity of focal employees with others. The value network density has been affected by the extent of control, information spread, knowledge and other facilitating tangible resources. Behavioural intention is the probability of anyone performing the behaviour in context. The construct 'system use' implicates the extent of use of a particular technology or product. It depicts the time and frequency which the technology will be used for. Facilitating conditions were defined as beliefs about supporting infrastructure regarding the use of the technology. Network density was described as the connectedness of the network and is defined as the number of interconnections in the network as a proportion of maximum possible interconnections.

In the context of blockchain as per this theory, the behavioural intention will be the probability of adoption of blockchain applications by a firm, and system use will mean utilisation and requirement by clients and customers. The facilitating conditions will be the availability of technology at affordable prices and the skill of the vendor providing the blockchain transformation. Network density will be the percentage of peers using blockchain. Valued network centrality for blockchain will refer to the perception of clients and peers that blockchain is essential to stay in business. Valued network density for blockchain will imply its adoption by other value creators such as suppliers, distributors and other value creators.

Discussion and Limitations

All the theories that are mentioned in the aforementioned section are adoption theories, and blockchain is a nascent technology which recently got its recognition by the exchequer as the gains from cryptocurrency will be taxed and the governing bank of India will launch its digital currency (*The Times of India* [TOI], 2022). At prima facie, it appears to be a back-end technology, but the categorisation as back-end or front-end depends upon the position of the firm in the value chain. To adopt blockchain in the process management for an industry or firm will require an analysis that needs to be rooted into the adoption of technologies previously done

by firms or individuals, and this premise has been adopted by different works (see; Fichman, 1995; Fichman & Kemerer, 1997; Zhu et al., 2006). The theories mentioned in the third section sufficiently cover the theoretical premise which was previously used by different researchers in the adoption behaviour shown by individuals and firms. To provide a quick view to the decision-maker in his/her context, the list of theories against the constructs used in these theories has been provided in Table 1. The theories discuss to provide the literature scenario ab initio. This is required because the maturity level of IT for different firms may be different, and this will provide a comprehensive mind map to analyse the situation for the adoption of blockchain. The serial number used against these theories have been used to denote them in Table 2 while doing their taxonomic representation with the constructs that were used. If the constructs are not overlapping among theories, then they are grouped in the cluster, and the construct 'behavioural intention' is representing the intention to use a new product or technology that is, hence, common in all theories. Although a researcher or decision-maker will use up to three to four theories in research or decision-making, the familiarisation with different theories will provide more confidence in the selection. This review can be extended to study the adoption and usage-level preparation in different business function such as supply chain, tracing, warehousing and many more. In digital currency, the Indian government is ready to adopt it (TOI, 2022).

Conclusion

This article discusses adoption by one firm only; however, the gains can be achieved by this kind of technology when an industry adopts it. In industry, the percolation of blockchain will depend upon the number of firms adopting it (Uzzi, 1996). It is called the externality of the network, and blockchain is essentially a type of database only and it needs to be accessed by a network for utilisation. The taxonomy of theories with constructs is provided for prevalent theories of adoption. This article provides a starting point to be familiar with blockchain, as it is in the nascent stage, and the explanation of constructs are generic in nature with no specific industry in consideration. This article finds usefulness to decision-makers by providing understanding about blockchain technology and its adoption. Academia will find utility in the development of assessment and measurement tools regarding blockchain technology.

Table 1. Different Theories of Adoption and Constructs Used.

Sl. No.	Name of Theory	Exogenous Constructs
1	Diffusion of Innovation Theory	Innovation, communication channel, time and social system
2	Theory of Reasoned Action	Behavioural intention, attitude and subjective behaviour
3	Theory of Planned Behaviour	Above (#2) + perceived behaviour control

(Table 1 continued)

(Table 1 continued)

Sl. No.	Name of Theory	Exogenous Constructs
4	Social Cognitive Theory	Triad of factors (social, personal and behaviour) and outcome
5	Technical Adoption Model	Perceived behaviour and ease of use
6	Extended Technology Adoption Model	Above (#5) + voluntariness
7	Motivation Model	Intrinsic and extrinsic motivation
8	The Model of PC (personal computer) Utilisation	Emotional drivers and cognitive limitations
9	Unified Theory of Acceptance and Use of Technology	Performance expectancy, social influence and infrastructure availability
10	Model of Acceptance with Peer Support	Behavioural intention, system use, facilitating conditions, network density, network centrality, value network centrality, valued network density and social connections

Table 2. Taxonomic Representation of Theories with Constructs in a Tabular Format.

	Name of the Factor	1	2	3	4	5	6	7	8	9	10
a	Innovation	•									
b	Communication channel	•									
c	Time	•									
d	Social system	•									
e	Behavioural intention	•	•	•	•	•	•	•	•	•	•
f	Attitude		•	•							
g	Subjective behaviour		•	•			•				
h	Perceived behaviour control			•		•	•				
i	Self-efficacy			•							
j	Triad of factors (social, personal and behaviour) and outcome				•						
k	Ease of use					•	•				
l	Voluntariness, experience, image, job relevance, output quality, result demonstrability						•				
m	Intrinsic and extrinsic motivation							•			
n	Emotional drivers and cognitive limitations								•		

(Table 2 continued)

(Table 2 continued)

	Name of the Factor	1	2	3	4	5	6	7	8	9	10
o	Performance and effort expectancy, social influence and infrastructure availability									•	
p	System use, facilitating conditions, network density, network centrality, value network centrality, valued network density and social connections										•

Note: 1–10 = theories; a–p = different constructs used in theories.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author disclosed receipt of the following financial support for the research, authorship and/or publication of this article: In reference to file number 'NIFTEM/Dean Research/2020/20', the author here recognises and thanks the National Institute of Food Technology Entrepreneurship and Management, Sonepat, Haryana, India, for seed-fund.

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Article

Funding Failure: Determinants of Persistence

IMIB Journal of Innovation and Management
1(1) 58–64, 2023

DOI: 10.1177/ijim.221085417
jim.imibh.edu.in

Chandresh Baid[1] and Devesh Baid[2]

Abstract

Since the economic meltdown in 2008, crowdfunding has emerged as an alternate source of finance for entrepreneurs looking for funds to start or support their venture. Most research in the area of crowdfunding has focused on the determinants of successful funding. To the best of our knowledge, very few studies exist about what happens to a project with an unsuccessful funding on crowdfunding platforms. Do the entrepreneurs who failed to get funding from crowdfunding platform abandon their project or do they persist with it and try to find alternate sources to make their dream come true? In this article, we study the determinants of persistence of an entrepreneur to bring their project to life after failing to receive funding from crowdfunding platforms.

Keywords

crowdfunding, failure, learning from failure, persistance

Introduction

Entrepreneurs play a critical role in the economic development of country or region. They contribute to innovation, employment and social welfare of the region in a direct or indirect way (Ahmad & Hoffmann, 2008). Probability of success of an entrepreneurial venture is low due to risks and uncertainty associated with starting a new venture, and hence entrepreneurs have always found it difficult to source

[1] Seidman College of Business, Grand Valley State University, L. William Seidman Center, Grand Rapids, Michigan, USA
[2] International Management Institute, Bhubaneswar, Odisha, India

Corresponding author:
Chandresh Baid, Seidman College of Business, Grand Valley State University, L. William Seidman Center, 50 Front Avenue SW, Grand Rapids, Michigan 49504, USA.
E-mail: baidc@gvsu.edu

capital to start a new venture. Traditional sources of finance, like banks, usually do not give loans to entrepreneurs due to risk associated with projects and lack of collaterals (Ferrary & Granovetter, 2009), and sophisticated investors, like venture capitalists (VCs), have very specific and stringent criteria for investment, and, in general, in a year, VCs invest in a few hundred companies only (Mollick, 2013).

Crowdfunding with its advent after the 2008 financial crisis became an alternate source to seek fund for entrepreneurs, where they could go beyond family and friends and involve society at large in their entrepreneurial cause (Bruton et al., 2015). As on date, entrepreneurs in over 100 countries have sourced over billions of dollars to start or support their entrepreneurial activities (infoDev, 2013).

Even after such a promising data to support its success, it is a fact that only about 50% projects get funded on crowdfunding platforms and only 3% of failed projects retry for funding (Greenberg, 2015). Contemporary research on crowdfunding has so far focused on the determinants of success for a funding request, that is, what characteristics should an entrepreneur and its project have to receive funding from crowd and what happens to projects once they receive funding. Do they deliver as per their commitment? Do they contribute to economic and social development of the region and society at large (Colombo et al., 2015; Mollick, 2014, 2016)? To the best of our knowledge, only a handful of research has been done on what happened to the entrepreneurs and projects which failed to acquire funds on the crowdfunding platform (Greenberg, 2015; Harburg et al., 2015)? Do the projects die or do the entrepreneurs persist in their quest to bring their venture to life? More specifically, we focus on what characteristics of entrepreneurs and environmental context contribute in their decision to persist with their venture and look for alternate ways to bring their dream to life versus abandon the idea completely.

Theory and Proposition Development

Failure

Failure is an integral part of entrepreneurial activities. Entrepreneurial projects fail more often than not (Greenberg, 2015). Creative and innovative projects fail multiple times before succeeding eventually (Barron & Harrington, 1981). The implication of failure becomes more severe and critical in online environment like crowdfunding because of high visibility and persistence of evidence of failure even after the event has passed (Greenberg, 2015). Failure has been studied in entrepreneurial literature from various lenses—grief, passion, emotions, motivation, self-efficacy and learning (Cannon & Edmondson, 2005; Jenkins et al., 2014; Shepherd & Cardon, 2009; Wolfe & Shepherd, 2015). But none of these studies have focused on the online aspect of failure and its associated social cost. In an online crowdfunding environment, success or failure occurs in a social context, which an entrepreneur creates by engaging their social capital on

crowdfunding and social media platform (Colombo et al., 2015; Giudici et al., 2013; Mollick, 2014). In such an environment, failure does not only have a monetary cost but it also has a social cost. Researchers have also studied the behaviour of individuals under public and private failure events and have found out that in order to restore self-esteem, individuals exaggerate their superiority over others in a private environment, but in a public environment where information is transparent, individuals are forced to adopt a more humble and egalitarian view (Brown & Gallagher, 1998). Individuals look for psychological safety when they engage in risky behaviour. Self-efficacy can reduce the need for psychological safety as well as provide motivation for success. Self-efficacy also aids in learning from failure (De Hoe & Janssen, 2014; Harburg et al., 2015).

Margin of Failure and Intention to Persist

On a crowdfunding platform, it is easy to determine the level or margin by which a particular project failed to achieve its funding goal. Entrepreneurs can see the daily progress as the project moves through the funding cycle. Projects can fail by a small or large margins on a crowdfunding platforms (Kuppuswamy & Bayus, 2015). The margin by which a project fails on a crowdfunding platform has implications for the entrepreneur. A project which fails by a small margin sends a positive signal to the entrepreneur about the acceptance of their idea and entrepreneur's competency by the community. On the other side, when an entrepreneur fails by a large margin, they get a negative signal from the community about the confidence of the community in the idea and the entrepreneur to pulls it off. But in both the cases, the signal strength is strong. As one moves along the continuum of margin of failure (from large to small), one would interpret more and more positive signals from the community, and it would result in providing the required cue to the entrepreneur to continue to persist with their idea and give it another try.

Based on the above arguments, we posit that as the margin of failure will decrease for a crowdfunding campaign, the intention to persist with the idea will become stronger.

Proposition 1. *Margin of failure will be negatively associated with the intention to persist with the project idea.*

Learning from Failure and Intention to Persist

The process of executing a funding campaign is an enriching experience. An entrepreneur has the opportunity to learn various aspects of executing a funding campaign: pitch creations, social media and crowdfunding community engagement, PR management, etc. All these experiential activities have the potential to enhance the learning and skills of an entrepreneur (Yang & Hahn, 2015).

Crowdfunding platform not only serves as a source of funds for the entrepreneurs but it also serves as a source of wisdom from the crowd (De Buysere et al., 2012). An entrepreneur gets feedback from the crowd about their idea and business plan once they launch their campaign on the crowdfunding platform (Schwienbacher & Larralde, 2010).

For example, one of the backers on a campaign page (Kickstarter, n.d.) commented as follows:

> Don't you guys have a feeling that multipack has totally no sense when you're charing 3x shipping with it? 30 USD per copy is enough to buy another game for it ….

And the entrepreneur responded back by saying as follows:

> Thank you for bringing it to our attention. The price of the bundle reward tier is discounted, so you save $5/game. However, we realize this isn't really a significant discount, especially for those in Central EU and other parts of the world where a single game is $30/shipping. So, we're working on recalculating our shipping cost for bundles to those areas, and I'll update you shortly on what we come up with :)

This clearly demonstrates the wisdom shared by the crowd and the learning attribute of the entrepreneur.

The learning from a failure (Leoncini, 2017; Simmons et al., 2014) which an entrepreneur gets should help them process the signals received from the failure margin with less ambiguity. In the case of low margin of failure, the positive signals are strong and the relationship between the margin of failure and intention to persist with the project idea should not be impacted by the level of learning from the failure.

In the case of high margin of failure, the learning from the failure can have a significant effect, and it could change the direction of the original relationship between the margin of failure and the decision to persist with the project idea. In this case, if an entrepreneur learns from the failure through their own experience of executing the campaign and also through the feedback received from the community (Yamakawa et al., 2015), then they will be able to identify the gaps in their project idea or campaign execution and it should give them strong reason to change the idea so that it is appealing to the community. Since the original idea or the original execution process did not click at all, the entrepreneur will not hesitate in changing them based on their learning.

The effect of learning from failure on the case when the funding failed by around 50% should be different than what we expect when the margin of failure is high. In case a project receives around 50% of funding with its current pitch and execution, the entrepreneur will be in two minds regarding changing the pitch and the execution plan for a relaunch because they may fear losing the current backers if they modify the idea based on the inputs from a certain section of the community.

Based on the theoretical arguments discussed above, it can be proposed that learning from failure will moderate the relationship between the margin of failure and the intention to persist, such that the intention to persist will be high for both high and low levels of the margin of failure and low for mid-levels of the margin of failure (Figure 1).

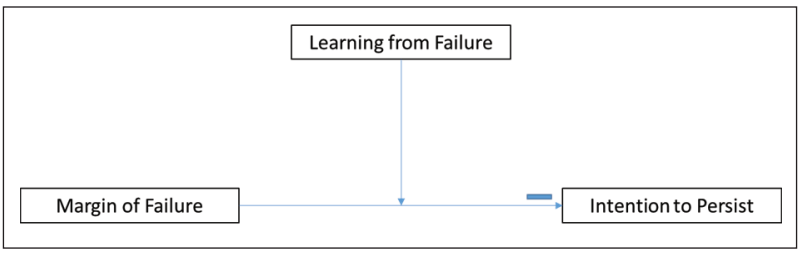

Figure 1. Proposed Model.

Proposition 2. *Learning from failure will moderate the relationship between the margin of failure and the intention to persist such that there will be high intention to persist at both low and high levels of the margin of failure when an entrepreneur learns from a funding failure.*

Discussion and Conclusion

This article has multiple theoretical implications. It contributes to the field of crowdfunding and learning from failure in entrepreneurship. Funding failures are not an adequately researched area in crowdfunding. With over 50% of crowdfunding projects failing to get funding, it is an important area for research. It is not only a loss of time and money that went into executing failed campaigns but also a personal loss of self-esteem and self-efficacy which an entrepreneur goes through with the event of failure (Harburg et al., 2015). By understanding how an entrepreneur makes a decision about relaunch and to persist with their project idea, we can help device solutions which can aid entrepreneurs during failure events. Such interventions will lead to relaunch with improved project ideas which will raise the level of the overall entrepreneurship and innovation in the industry (Greenberg, 2015).

This research contributes to our understanding of how an entrepreneur interprets the signals from the margin of failure and how those signals are moderated by their learning from the failure experience. If an entrepreneur is able to learn from the failure, then the probability that they are going to persist and try again to relaunch their campaign goes up even in situations where the margin of failure was large during the original campaign. This has implications for the crowdfunding platforms. Crowdfunding platforms can intercept the failure events and can connect the failed entrepreneurs with others by forming a community of creators, who can share their experience of failure and how it led to the success later and help maintain the self-esteem and self-motivation of the entrepreneur. The crowdfunding platform can also intervene in connecting the backer community to the creator by asking them to leave a note of encouragement and feedback for the entrepreneur. All these interventions will aid the entrepreneur in learning and will motivate them to persist with their project idea (Yang & Hahn, 2015).

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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Article

The Portrayal of Social Media Marketing in the Luxury Tourism Industry: A Review of the Literature and a Preliminary Analysis

IMIB Journal of Innovation and Management
1(1) 65–81, 2023

DOI: 10.1177/ijim.221096505
jim.imibh.edu.in

Jyotisman Das Mohapatra[1] and Ashok Kumar Dash[2]

Abstract

Luxurious tourist industry winds up with the thoughts of exclusivity with restricted access to a select number of socially isolated travellers. Our comprehensive literature survey focuses on understanding the approach of tourism academia in the context of luxury travel, which is constructed on the remarks from social media and the specialised areas with regards to the studies that were conducted prior to this. The 'luxury tourism', 'elite travel', 'social media' and 'sustainability' were used in different combinations to discover literature. This was done using Google Scholar, the ProQuest database, etc. The critical analysis was conducted based on the peer-reviewed publications. The following three areas were selected and reviewed: (a) social media's importance in luxury tourism; (b) the behavioural features of luxury travellers who use various social media apps; and (c) existing literature surveys that provided the limitations of analysing data, specifically, in the context of luxury tourism. The examined papers and publications for the last 10 years, from March 2010 to March 2020, were considered to determine the themes and focus points, as well as to measure the value of social media in luxury travel. The article discusses the upcoming research issues, and the major hindrance in this is that it requires new conceptual and methodological frameworks to enhance deep understanding of the mediating effect between social media and the luxury tourist industry based on the findings of various reviews of literature.

[1] Utkal University, Bhubaneswar, Odisha, India
[2] Department of Business Administration, Ravenshaw University, Cuttack, Odisha, India

Corresponding author:
Jyotisman Das Mohapatra, Utkal University, Vani Vihar, Bhubaneswar, Odisha 751004, India.
E-mail: jyotisman@srustiacademy.ac.in

Keywords
Luxury tourism, social media, elite travels, sustainable

Introduction

To have sustainable existence is the important aura in tourism marketing. In context to the United Nations, the four fundamental features of sustainability are economic development, social justice, natural resource protection and environmental protection (Andriate & Fink, 2017; Gilmore & Simmons, 2007; Jenkins & Schroder, 2013). Sustainable resource management develops the atmosphere which supports society's social, economic and lucrative expectations. Corporate competitiveness may also be improved via the usage of sustainability (Cantele & Cassia, 2020). Sustainable factors have been found to have an impact on luxury tourism industry development, and the tourists are more inclined to the empathy of tourism industry including resorts (Rishi et al., 2015), cruises (Han et al., 2019), restaurants (Gao et al., 2016; Rishi et al., 2015), etc.

Furthermore, the tourist industries create massive environmental impact and the enormous increase trend of the luxury tourists are more concern to the environment. At a very early stage, the tourist service providers have identified and noted that luxury tourism will have more competitive benefits in the future (Hedlund, 2011; Modica et al., 2020). According to Han et al. (2011), eco-friendly strategy is one of the crucial marketing strategies for the luxury tourism business (Rishi et al., 2015). Research has also highlighted the need of encouraging sustainability in the luxury lodging market. A majority of the businesses have accepted the usage of digital and social media marketing tools to effectively portray themselves as environmentally friendly and as a sustainable business (Wood & Khan, 2016). Many tourism companies consider online exposure as an important way to capitalise their resources and gain competitive benefits for achieving corporate success (Smithson et al., 2011; Vorhies & Morgan, 2005). Consumers can use social media to express their thoughts and search for luxury tourism guidance (Culnan et al., 2010; Giglio et al., 2020; Kim & Lee, 2019; Park et al., 2016; Stieglitz & Dang-Xuan, 2013; Wood & Khan, 2016). Companies always focused on the social media marketing as their major low-cost information-disseminating advertising tool for sharing vital information about the company's policies, products offered, services rendered and the offers and discounts.

In context to the luxury tourism industry, social media marketing is the most familiar tool for both businesses and consumers; it is also the hot and trending research issue among academics (Smithson et al., 2011). Social media technologies have proved useful in helping businesses to adapt their communication environments (O'Brien, 2011). The social media networks are 'websites that allow users to interact and participate with other individuals, resulting in a community of people who exchange information and content' (Minazzi, 2015). Social media, as a widely utilised communication medium, has now played a crucial mode for creating awareness on luxury tourism industries to increase the eco-friendly standards (Minazzi, 2015).

With a market worth of US$891 billion in 2019 and an estimate of US$1.6 trillion by 2026, the luxury tourism industry has grown enormously in frequent years (Allied Market Research, 2019). The industry's efforts to communicate with its consumer base via social media have expanded considerably, and as has the sector's economic clout. The use of social media and the big data analytics has a significant impact, and it can be considered as the major component of a luxury tourist brand's strategic management from the viewpoint of luxury tourism. Scholars employed social media interactions (Kim & Lee, 2019), online rating and sentiment analysis and social media interactions (Giglio et al., 2020) to gather input from guests of luxury hotels in order to better understand customer sentiments (Boo & Busser, 2018). In contrast to past empirical investigations, we conducted our research using an integrated literature strategy. The following is how this article is structured: The review of literature section of the article makes use of the Google Scholar, OneSearch and most recent ProQuest database to highlight an overview of the key terms 'luxury tourism', 'elite travel', 'social media' and 'sustainable' in various combinations. Kuhlman and Farrington (2010) emphasise on the key terms 'profit' for businesses (economic) and 'happiness' for audience (social); both these issues are the mediating factors of technology, and they must always take into account the environmental factors in an attempt to construct sustainability in the context of the triple bottom line. The study highlighted the economic feasibility of the luxury travellers and through the usage of the social media tolls and strategies it's became easy to understand the business approach and seeking to reach out to this high-end market segment.

Objectives of the Study

The major goal of this study is to find out the impact of social media marketing on the lucrative luxury travel business. The other purpose is to see if social media is being used to meet client satisfaction goals as well. The secondary goal is to research and develop tactics that will aid luxury tourism in building effective marketing strategies using social media tools and techniques.

Scope of the Study

With the capacity to promote economic growth and create jobs, the luxury tourism sector is seen as a critical component of many countries' National Development Plans. Continuous efforts to promote the tourism industry are essential in order for it to remain competitive and contribute to the well-being of the people. The study's purpose is to get a deep understanding of the utilisation of the social media to promote luxury tourism, which will aid marketers in making better decisions and legislators in formulating better legislation. The use of social media in the promotion of luxury tourism benefits both the promoters and the travellers. The study investigates the usefulness of the social media in marketing the luxury

travel industry. Another topic for future research is why luxury travellers are afraid to utilise social media? What makes them appear to be overly reliant on cognitive media? This may need an in-depth study into the world of luxury travellers in order to understand their travel and online community activity channels. A study like this might be valuable for luxury firms wanting to improve their communication across numerous platforms.

Study Approach

An integrated literature review is a one-of-a-kind methodological tool that allows the construction of new forms by methodically studying relevant information (Chermack & Passmore, 2005; Torraco, 2005, 2016; Wood et al., 2020a). This integrated literature review successfully describes and assesses a specific genre of current literature (Chermack & Passmore, 2005; Wood et al., 2020b). This strategy can give new dimensions to the research that have produced a range of critical findings (Torraco, 2005, 2016). Considering only the genuine publications from the literature review, we followed Torraco's (2005, 2016) earlier recommendations. To do so successfully, we employed Callahan's six key criteria for conducting an integrated literature review (Callahan, 2010; Wood et al., 2020a): (a) From what sources (databases, for example) did the articles come? (b) When searching the database, how long did it take you? (c) Who was the investigator in charge of the case? (d) How did the articles find their way to their final destination? (e) How many papers were found and how many articles were chosen for the study? (f) Why were the studies chosen?

Between July and August 2020, the first article search was conducted on the online library platform, especially the ProQuest and JSTOR databases. In context to the luxury tourism, social media marketing and the impact of sustainability are the most understudied topics. To surpass this issue, a thorough research was done in Google Scholar, and various related articles were studied to expand the collection. The search included phrases such as 'luxury tourism', 'elite travel', 'social media' and 'sustainability'. These keywords were chosen because they are interchangeable with industrial practice and are highly familiar with the topic related to the tourist literature. Only titles, abstracts or keywords were considered to ensure that the publications covered the essential key phrases. After a thorough database search, the total number of the published research articles that were studied was 4,769.

The published research articles were considered during the time frame of March 2010 to March 2020. The research was done on an initial keyword research basis to check that there was plenty of study on this issue. Luxury tourism, like luxury goods, had to decide whether to enter the web business to increase the engagement ratio of clients and to do the market segment analysis for the valued personalised services, in-house shopping and one-of-a-kind experiences. Many top-tier luxury tourism brands have digitalised their services and many luxury tourism industries

is adopting revolution, in designing their home webpages for chatter planes, premium boats, and trademarked luxury resorts (Sotiriadou et al., 2014).

Findings and Analysis

With respect to the luxury tourism sector, the long-term viability has enormously increased the engagement of customers focused on the emergence of the penetration of social media in the luxury tourism sector. An in-depth study was conducted to explore the key findings on this topic. We also included theoretical notions to analyse the problems of using social media from the perspective of luxury tourism. An evaluation was also conducted on the key identical practices of the industry.

NVivo software was used for data analysis. The software can be best used for limited sample size than any other data analysis tool. The best part of the NVivo software is to focus on word count of every single theme (Blal & Sturman, 2014). The frequency of the word used and the word count was represented in the table which was done by NVivo software. It highlights on the importance of the social media platform that can be effectively used to persuade the users towards the luxury tourism industry.

The usage of social media has been growing prominently, and it can be considered as a key tool in positioning the luxury tourism industry companies in the minds of the customers in recent years. A review of this literature shows the various ways in which social media has been utilised as an important promoting tool for luxury tourism enterprises. Electronic word-of-mouth (e-WOM), particularly through social media reviews, has emerged as a critical income and push and pull sales source, with the studies confirming the relevance of comments and likeliness of the customers in this respect. Leung et al. (2017) evaluated numerous market sectors utilising a review system divided into block (total number of reviews received about a hotel) and valence (importance of reviews; the ratings in received reviews). The research observed that the review system and valence has a strong affinity on the revenue received in the luxury hotel, whereas quantity of reviews had a larger impact on lower and medium-range hotel revenue.

Amelia and Hidayatullah (2020) investigated the influence of diverse communication approaches in prior studies on social media efficacy on various categories of luxury hotels such as premium, upscale, luxury, upper upscale, midscale, upper midscale and economy. According to their study, determining the Facebook message typology approach included two components, focused with both ‘what to say’ and ‘how to say it’. In addition to that, the studies about various hotels of all sizes included Facebook as a marketing tool in many ways. Facebook was majorly used by luxury hotels to develop their brand. Xiang et al. (2017) presented a study on the influence of Instagram activity on purchase intent and perceptions of premium value in high-end hotel restaurants. This study found that utilising social media in this regard has a huge effect both on a consumer’s desire to dine at the

restaurant and their perception of premium value. Such impacts demonstrate social media's ability to boost the service performance. The usage of social media and the big data analytics is increasingly important for managing luxury tourism enterprises in the luxury tourism sector. To gain a better understanding of customer perceptions, researchers examined luxury hotels' social media interactions. In this regard, Abrahams et al. (2015) investigated the use of social media by six high-end London hotels (United Kingdom). Their findings, achieved with Wolfram Mathematica software, showed that big data analytics and machine learning techniques can help luxury hotel management to monitor the impact of social media on a regular basis. Another study (Abrahams et al., 2015) considered the usage of the social media analytics procedure, which was identified in previous studies (Aydin, 2020; Fan & Gordon, 2014) to see if there are any differences in customer ratings between the Tripadvisor, Expedia and Yelp platforms, as well as to examine the relationship between a customer and a company.

Abrahams et al. (2015) showed that the content and structure of online review data acquired from different platforms may differ greatly using a regression analysis and text analytics approach. More crucially, their work advances the usage of social media analytics by proposing that research which gathers data majorly from online websites should highlight the characteristics and possible biasedness that exists in social media data.

In Table 1, we have summarised the reviewed articles, and a description of the social media platforms have been provided to have an idea about luxury

Table 1. Gist of Research Findings Found in Literature 2010–2020.

Authors by Year of Publication	Findings Summary	Social Media platforms
Cervellon and Galipienzo (2015)	In Facebook, information, more than emotional appeal, is more essential to young adults. In contrast, it has no influence on whether or not you choose to stay in a high-end hotel.	Facebook
Blal and Sturman (2014)	Emotional reviews have a bigger influence on a high-valued hotel's revenue. The revenue is calculated for each room. However, as the number of reviews grow, the room's sales RevPAR declines.	Hotel reviews on several travel websites
Park et al. (2016)	Tweets from celebrities, Internet bloggers and the cruise company itself are shown in Twitter statistics on cruise travel.	Twitter
Ryschka et al. (2016)	In order to impact positive impressions of cruise ships, it is necessary to reply fast on social media.	Social media (Broadly)
Leung et al. (2017)	Picture communications are quite attractive, including the website's prospect. Promoting things and brands is also a good utility of picture communications. It is more successful than an advertising material.	Twitter and Facebook.

(Table 1 continued)

(Table 1 continued)

Authors by Year of Publication	Findings Summary	Social Media platforms
Xiang et al. (2017)	Variations in the portrayal of luxury hotels across Internet.	Tripadvisor and Expedia
Tom Dieck et al. (2017)	Despite the fact that guests in the luxury hotels prefer usage of the social media, there could be no intentions of continuing it in the future.	General
Giglio et al. (2020)	Premium hotel brands appear to have a bigger effect on travellers' experiences, as seen by their images.	Tripadvisor
Kucukusta et al. (2019	In social media communication and involvement, corporate social responsibility (CSR) is gaining traction.	Facebook
Dolan et al. (2019)	Complaint replies are either a way of co-creating value or a way of preventing co-destruction.	Customer reviews and feedback social media broadly
Aydin (2020)	5-star hotels in India show higher level of engagement on websites from hoteliers where the material is photo-rich.	User interactions on the website.

travellers' characteristics. Several platforms that are used are Facebook, Instagram, Tripadvisor, Yelp, etc. Some social network media sites were also taken into account. To facilitate direct engagement with luxury travellers, travel supplier websites have been picked from these media networks. With regards to (Tiago et al., 2018). Interaction with social media sites of hotel and websites providing multimedia content are found likely to improve engagement. Where story narratives are present, it has been found that the appeal to luxury passengers is substantially bigger (Cervellon & Galipienzo, 2015).

To have an idea about social media's impact to influence judgements on the basis of a hospitality service provider, Liu et al. (2019) evaluated the response to Facebook postings created by a premium hotel to determine the priority of emotional or intelligence appeal. According to the findings, an informed appeal outperforms an emotional appeal in terms of improving consumer sentiments towards the hotel and raising quality perceptions. Social media, on the other hand, had no bearing on a customer's decision to reside in a premium hotel and like it via social media apps like Facebook. Dieck et al. (2017) investigated about the reason and circumstances leading to a positive experience of tourists' that could pique the millennial consumers' interest in visiting a location using social comparison theory. Social media apps are also often used to retain customers. According to Heinze et al. (2016), five factors impact luxury hotel clients' usage of social media networks, namely, social influence, enjoyment, accessibility,

perceived advantages and trust. They also observed that, although being qualitatively suggested, pleasure had minimal impact on luxury hotel customers' propensity to use social media in the future. Creating a sense of client loyalty is a crucial part of customer retention. The relevance of social media platforms in allowing and increasing loyalty of the customer in the context of premium cruise operators was proved by Ryschka et al. (2016). Furthermore, they indicated that cruise operators must ensure that they exchange authentic messages on social media. The messages should be customised, open, and honest in order to fulfil future-oriented goals. Perception has a significant impact on customer loyalty and retention.

Kucukusta et al. (2019) took a fresh look at this problem by investing the impact of social media on managing reputation of a company during a crisis. Their findings revealed that the frequency of people's response on social websites, knowledge about brands and the respondent's traditional values impacted the feelings of people about the reputation of a luxury cruise after a disaster. According to another study, social media may be used to achieve corporate social responsibility (CSR) goals. According to a study of Facebook postings, CSR-related posts are less prevalent than marketing-oriented posts while having similar levels of popularity and engagement (Yoo & Lee, 2015). Furthermore, the CSR-related postings with the most customer interaction were those that aim to encourage CSR initiatives. Cervellon and Galipienzo (2015) evaluated social media involvement on luxury cruise liners as part of their research. According to their results, for achievement of a business strategy with regards to the content orientation, the organisations must work on a social media strategy, thereby enhancing multimedia content across various websites. In spite of social media's augmented popularity in the premium tourist business, some travel companies are still in the preliminary stages of adopting the social media. Ponte et al. (2015) explored the usage of social media in marketing historic tourist businesses from the perspective of luxury tourism. They discovered that most heritage listed hotels in the United States focus on supplying textual information about their history rather than producing a varied assortment of pleasant stuff for Facebook clients by analysing Facebook posts from these hotels. Premium hotels of Spain that utilise Facebook as a medium of communication, according to Feroz and Wood (2017), focus only on their customers, neglecting other essential actors in the hotel sector. To put it another way, hotels use social media to share information related to markets. One additional problem is the urge to look for several tactics with regards to social media for various demographics, which have been targeted, particularly to fulfil the demands of young and lady clients (Cervellon & Galipienzo, 2015). A social media presence can affect customers' purchasing decisions and customer connections, providing luxury tourism providers with long-term competitive advantages (Ponte et al., 2015; Shin & Back, 2020). Given these considerations, augmenting the quality of tourism firms' in the context of social websites for the engagement of potential customers is a significant challenge.

According to a survey of the literature, the luxury tourism area employs three types of methodological techniques: mixed approach methods, analysis of the content and, the most common, quantitative method. There are several examples

from a quantitative approach. Xiang et al. (2017) investigated the relationship between Instagram engagement, luxury value perception and purchase intent in the context of luxury eating. Ryschka et al. (2016) employed interviews and online surveys to evaluate an expanded technology acceptance model (TAM) that includes satisfaction and long-term user intention. Finally, content analysis is a popular research method in social media studies. Researchers checked examined text data from passengers' social media posts on sites, like Facebook in this respect (Liu et al., 2019; Ponte et al., 2015). Giglio et al. (2020) investigated upon Tripadvisor's 7,395 pictures and have found that Various works have made use of visual data to show the significance of analysis in the context of big data, in building strategies towards management of luxury brands. Furthermore, Dolan et al. (2019) revealed that the notion of luxury may be obtained from images of vacationers hanging around casually, where spending of time is an indication of an affluent way of living. While information may be accessed on Facebook, emotional messages are typically off-putting to premium visitors and have smaller impact on the choices of visiting a certain destination (Liu et al., 2019). Promotional materials are sometimes filled with emotive elements that may detract from an attraction's appeal to high-end visitors (Amelia & Hidayatullah, 2020). It may have an impact if the number of reviews on the hotel website is small, but as the number of reviews becomes larger, its influence reduces (Leung et al., 2017).

Figure 1 depicts three types of social media postings, each of which serves a distinct purpose in the adoption of social media by luxury travellers and the subsequent success of the posts. User engagement is strong when suppliers publish on social media (e.g., hotel posts on Facebook). As a result, they are thought to provide incredibly useful information. Messages like this, on the other hand, inspire no emotional response. Photographs impact the travellers on social media and can have a direct influence on customer's affinity towards premium brands and possibly trigger a positive response. Hence, we can conclude that narrative pieces bring more success in comparison to marketing and reviews (Amelia & Hidayatullah, 2020; Rosenfeld, 2020).

Many of the studies that have been conducted so far support the industry's belief that premium visitors do not depend on social websites. Figure 1, according to our research, provides two major characteristics of social media that are critical in getting an idea about luxury tourists. To begin with, luxury visitors rely heavily on social media for information (Liu et al., 2019). Second, although it was not addressed in this study, it is reasonable to presume that luxury travellers have their own social media network apart from mainstream social media. In this regard, an exciting research indicates that rather than the consumers themselves, celebrities, bloggers and cruise liners or agents are the top contributors in tweets about cruise ships, supplying information or propagating alluring destination postings (Park et al., 2016). Another important notion to consider when it comes to luxury travellers is that they may or may not desire to continue utilising social media programmes (Heinze et al., 2016). Luxury travellers are known for relying significantly on personal relationships with travel agents and consultants to organise their trips (Thirumaran & Raghav, 2017). As part of our literature research, we searched for relevant topics and favourable trends for luxury travel

companies. The most commonly used terms in the abstracts are shown in Table 2 in the word frequency list.

Industry Implication

In many aspects of luxury tourism, social media is becoming increasingly important, especially when it comes to gathering information, making choices and promoting tourism, with a focus on the finest applications for communicating with clients via social media platforms. The rise of social media has had an impact on luxury tourism and hospitality research, in addition to its implications on tourist consumer behaviour. The social media strategy assists in the implementation and marketing of well-known strategies, as well as providing market and consumer insights that are used to build and adapt the organisation's business plan. Tourists have discovered

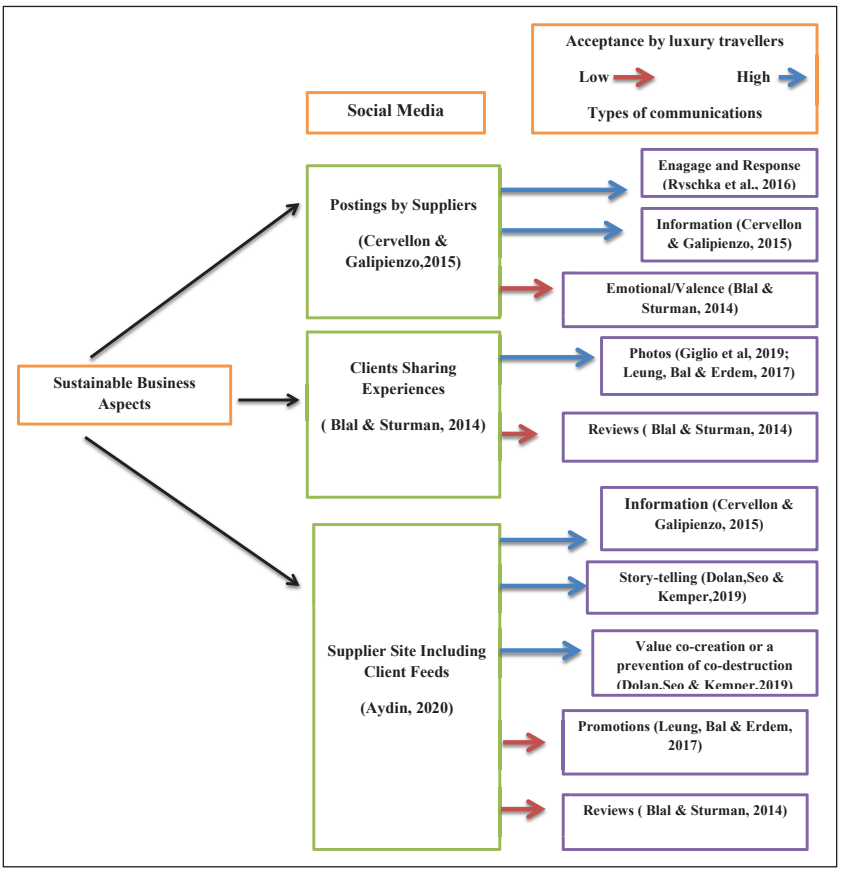

Figure 1. Social Media Responses on the Acceptance by Luxury Travellers.

Table 2. Frequency of Significant Words.

Sl. No.	Significant Words	Frequency (*N*)	Frequency (%)
1	Hotel	37	7.90
2	Social	32	6.90
3	Media	25	5.40
4	Effects	20	4.30
5	Luxury	19	4.10
6	Intention	16	3.40
7	Message	14	3.00
8	Value	14	3.00
9	Affect	13	2.80
10	Brand	13	2.80
11	Content	12	2.60
12	Cruise	11	2.40
13	Experience	11	2.40
14	Perception	10	2.10
15	Influence	9	1.90
16	Lines	9	1.90
17	Facebook	8	1.70
18	Online	8	1.70
19	Positive	8	1.70
20	Travel	8	1.70
21	Attitude	7	1.50
22	Information	7	1.50
23	Post	7	1.50
24	Sharing	7	1.50
25	Strategies	7	1.50
26	Marketing	6	1.30
27	Restaurant	6	1.30
28	Purchase	6	1.30
29	Responses	6	1.30
30	Tourism	6	1.30
31	Transportation	6	1.30
32	Visit	6	1.30
33	Website	6	1.30
34	Activity	5	1.10
35	Communication	5	1.10

(Table 2 continued)

(Table 2 continued)

Sl. No.	Significant Words	Frequency (*N*)	Frequency (%)
36	Context	5	1.10
37	Destination	5	1.10
38	Engagement	5	1.10
39	Facilities	5	1.10
40	Fluency	5	1.10
41	Interactive	5	1.10
42	Management	5	1.10
43	Narrative	5	1.10
44	Networking	5	1.10
45	Acceptance	4	0.90
46	Instagram	4	0.90
47	Followers	4	0.90
48	Impact	4	0.90
49	Quality	4	0.90
50	Ratting	4	0.90
51	Twitter	4	0.90
52	Specific	4	0.90
53	Sum total	467	100.00

that, compared to other tools, social media is an essential tool for them when choosing a vacation destination, ordering food and beverages, and shopping.

Despite this, a review of the research offers industry practitioners with clear guidelines for participation. Quick replies to enquiries, informative presentations and eye-catching photography are all excellent methods to promote the products or services and to engage the customers. In certain circumstances, social media updates can influence client purchase intent via improving customer contact. Luxury tourism providers, on the other hand, should develop strategies that make full use of the advantages of other forms of rich content, such as movies. In terms of luxury travel, it is found that the mostly used source of information dissemination is social media in contrary to the different social networks and having dialogues. Because luxury visitors are unique, their approaches of handling the social media sites are a bit different than the general tourists and different segment of the tourism markets. Luxury travel agencies should be more focused about this, and they should prepare the strategy of professionally interacting via different channels. Because of this scenario, the luxury tourism industry should be proactive in handling the social media and responding quickly to errors or misinformation. At the same time, users are becoming more used to the Internet's encryption and personalised services. The tourist destination industry has been updated thanks to the Internet's contributions, as it can be utilised as a distribution channel and a

source of information, and visitors' shared information, evaluations and suggestions assist to attract and reach new consumers from all over the world. Social media has both positive and negative influence on communication depending on the research topic and the mode of contact. Social media demands the integration of all marketing methods as well as the use of persuasive advertising that marketers can understand in order to create a competitive product/service experience. Where e-WOM is critical, this new communication channel maximises customer engagement.

Concluding Remarks and Future Research Opportunities

This article looked into the intersection in context of sustainability, luxury travel and some of the popular social media. The importance of the usage of social media in luxury tourism has received very little research. Given this gap, the research had found out a variety of contributions to the luxury tourism sector's long-term survival. This extensive review of the literature revealed a number of remarkable results. The findings were categorised into three broad segments: (a) the importance of social media in context to the luxury tourism; (b) the behavioural features of luxury tourists while using the social media sites; and (c) the technique utilised during previous studies. The first group comprises the majority of the articles.

Overall, our findings show that the way social media is presented has a substantial influence on the luxury travel industry's long-term viability. Social media posts are seen as a good source of information for travellers. Furthermore, luxury travellers prefer factual content to emotional content. Our word cloud demonstrated that luxury tourists utilise social media platforms, but the link to sustainability may be secondary to the information provided or the anticipation of receiving a prompt response to a query (Kucukusta et al., 2019; Yoo & Lee, 2015).

The advantages of doing research using mainstream social media include the ability to determine the way for a platform focused to educate the luxury adventurous travellers, although they have less knowledge or the accessibility to use the social media sites to gather the information. This information is critical since it directs practitioners in the proper direction if they want to break into the luxury market and continue in business. They need to be more focused on the recent and most popular social networking sites. This research has clearly highlighted the sustainability of the tourism and suggests that informative rather than promotional sustainability marketing is more effective. Some of the major limitation of our study is to understand the relationship between luxury travellers and sustainability features in a more exclusive market that typically operates in a community that is less accessible to academics.

Despite this, a review of the research offers industry practitioners with clear guidelines for participation. Quick replies to enquiries, informative presentations and eye-catching photos are all excellent methods to keep customers more engaged about the travel package. In certain circumstances, social media updates can influence customer purchase intent by improving customer engagement (Amelia & Hidayatullah, 2020; Giglio et al., 2020). Luxury tourism providers, on

the other hand, should develop strategies that make full use of the advantages of other sorts of rich content, such as movies. In terms of luxury travel, the research found that social media is mostly used as a source of information rather than a platform for forming social networks and having dialogues. Because luxury travellers are different, their interactions with social media platforms differ from those of other tourism industry segments. Because of the excessive usage of the social media sites by the tourists, service providers must be proactive on the popular social media platforms at all times in order to respond quickly to errors or misinformation (Abrahams et al., 2015). Another finding is that luxury tourism firms are enormously increasing the usage of social media to market their CSR initiatives, allowing them to engage with all stakeholders (Yoo & Lee, 2015). Finally, the research findings highlighted that huge budget should not be allocated to do the promotion in the luxury tourism industry as the tourists are not that much inclined or dependent about the information search as the content provided by the service provider may be irrelevant or not reliable which may not be received by the tourists (Tiago et al., 2018).

First, can the popular social media provide an acceptable outlet for luxury travellers to make their judgements, provided they will seek advice from the service provider for their tour details? Second, will the study be able to penetrate the barriers within the social media networks to get better clarifications to judge the appealing aspects for luxury travelers? Third, in-depth analysis may perhaps have the impact on the sustainable existence and to gain a better understanding of luxury visitors' viewpoints on travel-related environmental concerns.

Our findings revealed the critical need to investigate the interaction within the luxury tourism industry and the further intervention of social media. Some of the premium social media sites such as the Facebook, Instagram and Twitter appeal to a broad range of people who use this platform to gather information. The websites built for businesses such as the luxury hotels and travelling partners extended a space for feedback and suggestions where the audience can get a clear-cut idea of the product and services rendered by the companies. There has not been any research comparing the directness of the three kinds of communication or the types of feelings conveyed. This type of research might be useful for premium brands that are seeking to strengthen their communication across several media.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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Article

An Empirical Study of the Movement of Sectoral Indices and Macroeconomic Variables in the Indian Stock Market

IMIB Journal of Innovation and Management
1(1) 82–93, 2023

DOI: 10.1177/ijim.221086678
jim.imibh.edu.in

Sitaram Pandey[1]

Abstract

The goal of this research is to look at how the Indian stock market sectoral indices respond to three macroeconomic variables: oil price (OP), gold price (GP) and exchange rate (ER) between 2016 and 2020. The data of sectoral indices were collected from the Bombay Stock Exchange. The underlying series is evaluated as non-stationary at the level, but stationary in the first difference, using the augmented Dickey–Fuller unit root test. The multivariate co-integration analysis and vector error correction model indicates that there are long-term links between macroeconomic variables and sectoral indices in the information technology sector. Meanwhile, the research using the vector auto regression model approach shows that there are short-run correlations between macroeconomic variables and sectoral indices, namely Basic Materials, Fast Moving Consumer Goods, Finance, Healthcare, Information Technology, Auto, Bankex, Power and Reality. The results document that OP, GP and ER simultaneously have a significant effect on sectoral indices in the Indian stock market. To stabilise the stock market post-COVID-19, the authorities are advised to put economic policies sector-wise to accelerate the economic growth and to maintain fiscal discipline. The authorities need to stabilise the aforementioned macroeconomic variables to accelerate the economic growth as the ER has a significant negative impact on all sectors.

Keywords

BSE sectoral indices, vector error correction model, vector auto regression model, macroeconomic variables

[1] University Department of Management, Vinoba Bhave University, Hazaribagh, Jharkhand, India

Corresponding author:
Sitaram Pandey, University Department of Management, Vinoba Bhave University, NH 33, Sindoor, Hazaribagh, Jharkhand 825301, India.
E-mail: spandey1203@gmail.com

Introduction

In December 2019, the novel coronavirus (2019-nCoV) or COVID-19, an infectious disease, first appeared in Wuhan, Hubei Province, China. In January 2020, it drew worldwide attention due to its quick proliferation compared to other coronavirus strains. The Chinese government's response to the current virus was to place the city of Wuhan, which was the epicentre of COVID-19, under complete lockdown, which eventually proved to be an effective step in controlling the pandemic in many countries across the world. In an effort to avoid the spread of the disease, the whole city was locked down on 23 January 2020. The first death case of the COVID-19 pandemic was reported by the Chinese authorities along with WHO on 11 January 2020; its features were similar to pneumonia of unknown origin that caused maximum damage to developed countries such as America, Spain, Russia, UK, Italy, France and Germany, affecting 215 countries and territories around the world and 2 international conveyances. The first case in India was reported on 15 February 2020, and thereafter until 13 January 2021, the number of cases had reached to 10,502,332 with 99% recovery rate. This aggravated the socio-economic conditions of the country.

The global stock markets have been impacted by the economic losses caused by COVID-19. The pandemic's contagion effect on global stock markets is noticeable in practically every continent, with the Indian stock market also being one of the exchanges that was affected by COVID-19. Earlier also, the stock market crashed several times due to different reasons such as the cryptocurrency crash in 2018, European sovereign debt crisis in 2010 and financial crisis of 2007–2008. These crises always affect the volatility of the market. Since uncertainty increases market risk, it is critical to understand the stock market volatility in order to calculate the cost of capital and evaluate investment and leverage decisions. The stock market has thus become a significant instrument in capital development and economic progress. Several research on the links between macroeconomic variables and the stock market have been undertaken in India and other countries (Gan et al., 2006; Hosseini et al., 2011; Maysami et al., 2004; Mukherjee & Naka, 1995; Ouma & Muriu, 2014; Patra & Poshakwale, 2006). The previous studies clearly indicate that the changing macroeconomic variables have significant effect on developing markets like India. Tripathi et al. (2014) in their study of the effects of macroeconomic variables on sectoral indices in India found a high correlation among the variables and concluded that only foreign institutional investment (FII) affects all sectoral indices, while the rest of the macroeconomic variables selectively affect different sectoral indices in India. The stock market had a lot of volatility during the COVID-19 period that made a low of 7,610 on 23rd March and an all-time high of 14,564 within a year on 13 January 2021. The graph of NIFTY clearly indicates the variation which has taken within a year during the COVID-19 period (see Figure 1). The objective of this research is to determine the linkages of the Indian stock market with different macroeconomic variables (gold price [GP], oil price [OP] and exchange rate [ER]).

Figure 1. Historical Chart of NIFTY 50 for Last Two Years.

Source: https://charts.5paisa.com/

Literature Review

Linkages Between Gold Price and Stock Market Movement

Historically, gold has always trended higher in countries experiencing stock market slumps since it is largely viewed as a safe investment, and wise investors prefer to move their cash to the safer side. A negative link between gold prices and stock prices is expected based on historical evidence. The increase in demand of gold during recession is not only due to the domestic demand but the central bank also played a pertinent role in it. There is innumerable usage of gold such as investment, jewellery and risk diversifier, which make it very precious, and even the central government uses gold as collateral when they experience trouble with their balance of payments and need to borrow currencies from the international capital markets. Gold is also a safe investment when the rupee weakens, when conditions of high global inflation arises or during political disasters. It helps to diversify the portfolio, and it can be used as a hedging tool at the time of crises (Gaur & Bansal, 2010; Kaliyamoorthy & Parithi, 2012; Sumner et al., 2010). Gold is used as an investment asset class by investors (Jain & Biswal, 2016). Spot gold can be used as a hedge against stock market volatility (Dey & Sampath, 2018).

Linkages Between Oil Price and Stock Market Movement

Oil can be considered as a lifeline of any country as various industries, transports, ports, etc., run through it. OPs can sometimes transmit return and volatility to

stock markets in oil-exporting countries in a two-way fashion. From OPs to the stock market, there are poor unidirectional return and volatility transmissions. While the link between OPs and stocks grew during the crisis, it dramatically decreased afterwards (Bouri, 2015). According to Constantinos et al. (2010), there is a significant positive causal effect running from the OP index returns and OP volatility towards the stock market returns. In most nations, the relationship between the OP shock distributions and stock market returns is not steady over time. Positive and negative OP shocks have an asymmetric effect in the US market as observed by Sim and Zhou (2015). They are less evident in most nations for both the baseline and extended periods (Tchatoka et al., 2019). There are several studies in relation to OPs and stock market movements whose results are mixed. Some studies show bidirectional linkages, some studies show positive and negative unidirectional linkages, and some studies show no linkages between the undertaken two variables.

Linkages Between Exchange Rate and Stock Market Movement

There is a wealth of literature on the relationship between the ER and the stock market movement. Various types of connections have been discovered in various research. There are bidirectional volatility spillovers between the two markets, implying that future volatility in the stock market has a significant impact on future volatility in the foreign currency market and vice versa (Zhao, 2010). In terms of ER regimes, trade volumes, capital regulation and the size of the equity market, the linkages differ between economies (Pan et al., 2007). The return on the stock market had a causal effect on the return on the ER, with the possibility of a minor effect in the opposite way (Nath & Samanta, 2003). The stock market general index and the ER have a causal link. In this case, causality goes from the stock market general index to the ER. The ER is causally linked to the services sector index, implying that the ER precedes the services sector index. In this circumstance, the exchange rate can be utilized as a policy tool to stabilize the exchange rate in order to attract foreign portfolio investments for the services sector index and the overall general sector index (Farooq, et al., 2004).

As a result, the purpose of this study is to provide more information about the links between the movement of BSE sectoral indices and macroeconomic factors such as crude oil price (CP), GP and ER. The research will be helpful to individuals and institutional investors as it will provide alternatives for the diversification of portfolios which can raise returns of their portfolios by minimising their risks.

Research Gap and Motivation

In India, the financial literacy rate is poor. People have less knowledge about investment, and they are more fascinated towards banking and insurance products for earning returns on their capital as they are more concerned about safety of the principal amount. Stock market investment is still not a preferred investment

alternative among Indians, especially in the eastern region. However, as we all know, the stock market reflects the economy, and it is responsible for capital formation and economic progress. The Indian stock market cannot be seen in isolation rather all the markets that include American, Chinese, European or Japanese are interrelated, and spillover effect is common in each market. Their movement also gets affected by various other macroeconomic variables. The effect of various macroeconomic variables is different on different sectors, so not only the indices but the various sectors and their included companies are also getting affected due to the changes in the macroeconomic variables. The previous linkages may have distorted due to COVID-19 that need to be checked through empirical studies. It would have certainly impacted the Indian stock market and their respective sectors also. The stock market, as we all know, fluctuates from day to day and is influenced by a variety of factors, including changes in macroeconomic variables such as CP, GP and ER. As a result, understanding the dynamic movement of sectoral indices in connection to changes in macroeconomic variables is critical for investors. Previous studies are more in relation to market indices with macroeconomic variables, and limited studies were done in relation to sectoral indices and changes in macroeconomic variables. As a result of the scarcity of information about the movement of sectoral indices, this study focuses on the long-term and short-term relationships between the selected macroeconomic variables (CP, GP and ER) and 10 sectoral indices of Bombay Stock Exchanges (BSEs), namely Basic Materials, Energy, Fast Moving Consumer Goods (FMCG), Finance, Healthcare, Information Technology, Auto, Bankex, Power and Reality. The results of the study will guide the investors towards the construction of well-diversified portfolio in stock market.

Research Design

Data

In this research, the data related to stock market was taken from BSE. The sectoral indices data includes sectors such as Basic Materials, Energy, FMCG, Finance, Healthcare, Information Technology, Auto, Bankex, Power and Reality. The three different macroeconomic variables selected for this research are GPs, whose data was taken from mcxindia.com, CPs, whose data was also collected from mcxindia.com, and ER, whose data was collected from x-rates.com, on a daily basis from 2016 to 2020.

Methodology

The present study employed unit root test, co-integration test, vector error correction model (VECM) and vector auto regression (VAR) model to find results. Descriptive statistics were used to explain the nature of data. The stationarity of underlying series was evaluated by using the augmented Dickey–Fuller (ADF)

unit root test. Johansen co-integration test and VECM were used to check the long-term connections between macroeconomic variables and sectoral indices, whereas the VAR model was used to evaluate short-run linkages between macroeconomic variables and sectoral indices, namely Basic Materials, FMCGs, Finance, Healthcare, Information Technology, Auto, Bankex, Power and Reality.

The variables employed in the study are briefly described in Table 1.

Results

Descriptive Statistics

Table 2 summarises the descriptive statistics of sectoral indices and macroeconomic variables taken from different websites. It presents the results of mean, median, mode, standard deviation, skewness and kurtosis of closing prices of the undertaken series for a period of five years from 2016 to 2020. The data of standard deviation indicates that the volatility is higher in Auto, IT, and Banking sector, whereas Power sector is the least volatile. Closing prices of some sectors are positively skewed, whereas some of the sectors are negatively skewed. The kurtosis value is highest for healthcare index, and crude oil is closer to mesokurtic.

Table 1. Variables Description.

Variables	Description	Sources of Data
Sectoral indices	Bombay Stock Exchange (BSE) Indices	www.bseindia.com
Crude oil price	Per Barrel	www.mcxindia.com
Exchange rates	Rs. in per USD	www. xrates.com
Gold	Value in Rs. per Kg	www.mcxindia.com

Table 2. Descriptive Statistics of All Indices and Macroeconomic Variables.

Indices and Macroeconomic Variables	Mean	Median	Mode	Standard Deviation	Kurtosis	Skewness
Basic materials	2706.06	2777.19	2697.66	472. 60	–0.09	–0.47
Energy	4127.11	4164.87	2449.80	1032.47	–0.45	0.22
FMCG	10352.80	10845.92	11340.69	1421.76	–0.73	–0.69
Finance	5379.85	5615.51	6552.28	969.21	–0.72	–0.40
Healthcare	14923.80	14504.25	15435.62	1869.22	2.26	1.44
Information technology	13456.83	13322.56	10424.05	3184.24	0.75	0.95
Auto	20270.1	19914.95	21324.45	3479.741	–0.57	–0.18
Bankex	27313.16	27895.69	28564.32	5162.56	–0.80	–0.16

(Table 2 continued)

(Table 2 continued)

Indices and Macroeconomic Variables	Mean	Median	Mode	Standard Deviation	Kurtosis	Skewness
Power	1975.16	1982.5	1960.6	231.97	–0.07	–0.48
Reality	1863.51	1920.15	1357.37	384.18	–0.93	–0.09
Gold rate	1359.10	1295.70	1253.80	176.22	1.81	1.47
Crude oil	51.69	52.57	44.66	11.76	2.97	–0.91
Exchange rate	68.84	68.21	66.91	3.51	–0.71	0.45

Source: www.bseindia.com

Table 3. Unit Root Test Results.

	ADF (With Constant)			
Variables/Sectoral Indices	Level	*P*-value	1st Difference	*P*-value
Basic materials	–2.319	.165	–8.813	.000*
Energy	–1.048	.737	–10.164	.000*
FMCG	–1.754	.403	–10.485	.000*
Finance	–2.131	.232	–8.249	.000*
Healthcare	–0.149	.942	–23.235	.000*
Information technology	1.373	.999	–10.150	.000*
Auto	–1.351	.607	–23.420	.000*
Bankex	–2.083	.251	–9.179	.000*
Power	–2.153	.223	8.855	.000*
Reality	–2.409	.139	–7.800	.000*
Gold rate	1.956	.999	–8.553	.000*
Crude oil	–2.428	.133	–9.769	.000*
Exchange rate	0.929	.779	–10.421	.000*

Abbreviations: CE, cointegrating factors; Lmax, this Lmax tests the null of r cointegrating vectors against the alternative of r+1 cointegrating vectors; r, number of relationships.

Note: * Denotes significance at 1% level.

Unit Root Test

It is critical to address the issue of data stability early in the process, as it will have an impact on the results that will be provided at the conclusion of the study. A unit root test was performed to fix this issue. The unit root test is performed using the ADF test, which can validate whether or not the data has a unit root. Table 3 shows the results of the stationarity test using the ADF test.

All the 12 series were run through ADF with constants based on level, and the results revealed that they are non-stationary. The series were then transformed to 1st difference and all the 12 series were examined using ADF with constants, with the findings indicating that the series are stationary. The series were found to be stationary at a 1% significant level at the first level difference. The data series are now stable, allowing for additional analysis.

Johansen Cointegration Test

The connections of the sectoral indices with macroeconomic variables were examined at I (1). The long-term and short-term relationships between the variables were investigated. During the study period, the Johannsen cointegration test was used to check the long-run linkages between the variables. The results of Johannsen cointegration test for different sectoral indices have been presented in Table 4.

According to the analysis of cointegration Table 4, it was found that there exist long-run linkages only in the information technology (IT) sector for the period under study at 5% level of significance. The *p*-value was checked at 5% level of significance. The results are the same for both trace tests and maximum eigenvalue, indicating significant long-term links between the data series. The assumed hypothesis are as follows:

NH_1: Long-run linkages do not exist between macroeconomic variables and sectoral indices.
AH_1: Long-run linkages exist between macroeconomic variables and sectoral indices.

Based on the findings, the null hypothesis is accepted for all sectoral indices except the IT sector. As a result, there is a long-run relationship between macroeconomic variables and the IT sector only. During the study period, the other sectors had no long-run relationships with macroeconomic factors. At a 5% level of significance, the *p*-value for the IT sector index implies at most one cointegrating association.

Table 4. Johannsen Cointegration Test Result.

Sectoral Indices	Hypothesised No. of CE(s)	Eigenvalue	Trace Test	*P*-value	Lmax Test	*P*-value
Basic materials	r = 0	0.0120	22.211	.2960	15.003	.3008
	r = 1	0.0057	7.2086	.5600	7.1623	.4778
	r = 2	0.0000	0.0462	.8296	0.0462	.8297
Energy	r = 0	0.0099	20.713	.3865	12.351	.5269
	r = 1	0.0065	8.3618	.4348	8.1548	.3714
	r = 2	0.0001	0.2073	.6491	0.2070	.6491
FMCG	r = 0	0.0094	20.151	.4236	11.704	.5886
	r = 1	0.0068	8.4468	.4261	8.4296	.3445
	r = 2	0.0000	0.0172	.8956	0.0172	.8956
Finance	r = 0	0.0136	25.441	.1506	16.972	.1797
	r = 1	0.0068	8.4689	.4239	8.4237	.3451
	r = 2	0.0000	0.0452	.8316	0.0452	.8316
Healthcare	r = 0	0.0079	17.820	.5890	9.8969	.7563
	r = 1	0.0063	7.9223	.4809	7.9051	.3970
	r = 2	0.0000	0.0178	.8937	0.0178	.8938

(Table 4 continued)

(Table 4 continued)

Sectoral Indices	Hypothesised No. of CE(s)	Eigenvalue	Trace Test	*P*-value	Lmax Test	*P*-value
Information technology	r = 0	0.0178	29.814	.0499**	22.268	.0333**
	r = 1	0.0056	7.546	.5223	7.0132	.4961
	r = 2	0.0004	0.5336	.4651	0.5336	.4651
Auto	r = 0	0.0094	15.826	.7299	11.694	.5896
	r = 1	0.0056	7.546	.5220	7.0132	.4961
	r = 2	0.0004	0.1433	.7050	0.1433	.7050
Bankex	r = 0	0.0142	26.169	.1271	17.656	.1477
	r = 1	0.0068	8.5132	.4194	8.4714	.3405
	r = 2	0.0000	0.0417	.8381	0.0417	.8381
Power	r = 0	0.0116	20.948	.3714	14.468	.3413
	r = 1	0.0050	6.4805	.6435	6.2339	.5902
	r = 2	0.0001	0.2466	.6195	0.2466	.6195
Reality	r = 0	0.0147	25.772	.1395	18.286	.1223
	r = 1	0.0059	7.4860	.5288	7.4024	.4515
	r = 2	0.0000	0.0835	.7725	0.0835	.7725

Note: ** Denotes significance at 5% level.

VECM Causality Test

VECM causality test was conducted for all the sectoral indices, and significant information was concluded for various sectors. The short-run linkages were found between sectoral indices and macroeconomic variables. Table 5 summarises the findings of the VECM test. The table indicates that short-run linkages exist between sectoral indices such as Basic Materials, FMCG, Healthcare and Information Technology with crude oil. The short-run linkage was present in between Information Technology and Gold only and no short-run linkages were present in between any sectoral indices with ERs. Both the vector error correction method and cointegration results suggested that the IT sector index and macroeconomic variables have both long- as well as short-run linkages.

VAR Causality Test

Short-run links between the sectoral indices and macroeconomic variables were examined using vector autoregression (VAR) model that is not cointegrated in the long run. Table 6 represents the short-run linkages at 5% level of significance. Only the Auto sector has a short-run causality with gold. Crude oil has short-run causality towards Basic Materials, Finance, Bankex and Power sector indices at 5% and 1% levels of significance. The reality sector is significantly having THE short-run linkage with ER.

Table 5. VECM Causality Test Result.

	Economic Indicators Short Run		
Sectoral Indices	Gold Price	Oil Price	Exchange Rate
Basic materials	1.382 [0.1672]	2.217 [0.0268**]	–0.9609 [0.3368]
Energy	–1.545 [0.1226]	–1.032 [0.3023]	1.024 [0.3060]
FMCG	0.1838 [0.8542]	–2.003 [0.0454**]	0.8656 [0.3869]
Finance	0.6564 [0.5117]	–1.766 [0.0777]	0.4318 [0.6660]
Healthcare	–1.370 [0.1710]	–2.587 [0.0098**]	0.3300 [0.7414]
Information technology	2.187 [0.0289**]	2.556 [0.0107**]	–0.8802 [0.3789]
Auto	–1.729 [0.0841]	1.432 [0.1525]	0.4219 [0.6732]
Bankex	–0.8839 [0.3769]	1.834 [0.0669]	–0.6399 [0.5224]
Power	0.5805 [0.5617]	–1.743 [0.0816]	0.1192 [0.9051]
Reality	–0.6736 [0.5007]	0.7799 [0.4356]	–0.4501 [0.6527]

Note: ** Denotes significance at 5% level.

Discussion and Conclusion

Based on the time series data, this research evaluated the short- and long-run linkages between sectoral indices and selected macroeconomic factors. The findings of the data analysis revealed that there are both short- and long-run linkages between the BSE indices and macroeconomic indicators. According to the findings, there is a long-term relationship between the Information Technology industry and selected macroeconomic factors, while it was concluded that some of the sectors such as Basic Materials, FMCG, Healthcare, Finance, Bankex, Power and Information Technology have short-run linkages with crude oil. The Auto and Information Technology sectors have short-run causality with GPs, whereas ER has a short-run causality with the Reality sector. The study is useful for investors and fund managers who can utilise the results of this research to make a well-diversified portfolio. The results will provide insight about the movement of various sectors with macroeconomic variables. The findings show that the OP, GP and ER have a considerable impact on sectoral indices in the Indian stock market. To stabilise the stock market post-COVID-19, the authorities are advised to put the economic policies sector-wise to accelerate the economic growth and to maintain fiscal discipline. To boost the economic growth, the authorities must

Table 6. VAR Causality Test Result.

	Economic Indicators		
Sectoral Indices	Gold Price	Oil Price	Exchange Rate
Basic materials	1.127 [0.2598]	2.399 [0.0166] **	–0.3221 [0.7475]
Energy	–0.8474 [0.3969]	–0.4651 [0.6420]	1.303 [0.1929]
FMCG	0.1844 [0.8538]	–0.9594 [0.3376]	1.686 [0.0920]
Finance	0.9833 [0.3257]	–2.532 [0.0115] **	0.0880 [0.9299]
Healthcare	1.478 [0.1397]	–0.4962 [0.6199]	0.9720 [0.3312]
Auto	–2.464 [0.0139] **	1.090 [0.2760]	–0.3872 [0.6986]
Bankex	–0.9749 [0.3298]	3.116 [0.0019] ***	–0.03052 [0.9757]
Power	–0.1811 [0.8563]	–3.236 [0.0012] ***	–0.7229 [0.4699]
Reality	0.2803 [0.7793]	–0.1313 0.8956	–2.004 [0.0452] **

Note: ** Denotes significance at 5% level; *** denotes significance at 1% level.

stabilise the aforementioned macroeconomic variables, as the ER has a substantial negative influence on all the sectors.

The research is limited to three macroeconomic variables and the Bombay stock market sectoral indices. Further research can be done on a broad spectrum by utilising a greater number of macroeconomic variables and indices of different countries to make a general consensus on the results. The time span was also limited to five years that can be increased to make the results more robust.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author received no financial support for the research, authorship and/or publication of this article.

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Article

Economic Aspect of Implementing Green HR Practices for Environmental Sustainability

IMIB Journal of Innovation and Management
1(1) 94–106, 2023

DOI: 10.1177/ijim.221109016
jim.imibh.edu.in

A. Shanker Prakash[1], Anurag Kumar Gupta[2] and Simranjeet Kaur[1]

Abstract

Companies now have been more aware of the increasing necessity of integrating environmental and human resources management practices. Green human resource management (GHRM) uses human resource management (HRM) strategies to foster sustainable resource usage in corporate organisations and advances the issues of environmental sustainability through disruptive technologies. To foster the implementation of GHRM uniformly throughout industries across the world could only reflect the marginal impact on environmental sustainability. The purpose of the research article is to identify whether the adoption of GHRM in the organisation brought behavioural change among employees towards organisational commitment that could lead environmental sustainability. The study is conducted amongst different public and private sector banks in the Varanasi district of Uttar Pradesh, India, through primary data collection of 330 respondents. For analysing the adoptability of green behaviour amongst employees in the organisation, we have adopted structural equation modelling to examine the employee's commitment. The test result of the above tool of studying the four different latent variables leads us to conclude that path analysis and load factor exhibited stronger relationship through post-moderating

[1] Department of Commerce, University School of Business, Chandigarh University, Mohali, Punjab, India

[2] Department of Commerce, Mahatama Gandhi Kashi Vidyapith, Varanasi, Uttar Pradesh, India

Corresponding author:
A. Shanker Prakash, Department of Commerce, Chandigarh University, Mohali, Punjab 140413, India.
E-mail: shanker.e10381@cumail.in

effect, that is, latent variables lead towards green commitment. This leads us to conclude that organisations are trying to get environmental sustainability through GHRM practices, which in turn gives them a status of an environmentally sensitive organisation as well as some edge in this competitive environment. As a policy government is also expecting from organisations to develop themselves as environmentally sensitive by providing impetus of employee's commitment.

Keywords

GHRM, disruptive technology, environmental sustainability, human resource management, PLS-SEM

Introduction

An endless display of new technology is emerging in many parts. Almost all kinds of advancements are considered as progress, and the list of 'next big things' is growing exponentially. Not all emerging technologies will change the business or social environment—but some have the potential to disrupt the existing environment, change the way people live and work, and redesign pools of value. It is, therefore, important that business leaders and policy makers understand what technology will help them and prepare them accordingly. Automation and the digital economy that will transform lives, business, and the global economy, which could drive major economic change and disruption in the coming years. Disruptive technologies can change our world, as well as its benefits and challenges, and provide guidelines to help leaders from business and other institutions respond to mobilize traditional drivers of growth.

Green human resource management (GHRM) applies techniques for managing human resources (HR) to support a sustainable use of the resources of business organisations and to promote environmental sustainability more broadly (Mandip, 2015). The objective of environmental greening is to make use of environmentally responsible products and practices (without damaging or depleting resources to damage the environment) (Robinson, 2008). The GHRM, therefore, implies environmentally responsible HR policies and practices which, on the one hand, help organisations, through environmental brand identity, achieve their money objectives and, on the other hand, protect the environment against any adverse effects that can be caused by the policies and actions of their organisations. The capacity to satisfy the present demands without jeopardising the capability of forthcoming generations to meet their own needs and requirements is a concern of all environmentalists (WCED, 1987) and Cohen et al. (2012). There were many definitions provided in the environmental literature which generally showed the need for a balance between industrial development and the protection of the environment so that future generations may flourish (Daily & Huang, 2001). However, it is still disputed and unclear from the green movement for HR whether an individual organisation or society

in general is achieving towards environmental sustainability? It is, therefore, important to study how firms may organise their facilities with GHRM to enhance sustainable growth. Maraget Mead's quote from brainyquote https://www.brainyquote.com/quotes/margaret_mead_157496 rightly warns, 'If we destroy environment, we have no civilisation'. This comment properly emphasises that our environment provides, both socially and business-wise, dangers and perspectives, and so everyone should be responsible for desperate love and attention towards environmental well-being and sacrifice to promote its health. Decision-makers should, thus, consider this while taking decisions.

The adoption of GHRM links human resource and environment policies (Sinniah et al., 2020) that promotes ethical management and broader support in the organisation's sustainability. We have to safeguard our environmental resources for the next generations to flourish. The green concept for human resources management (HRM) aims to help us understand and maintain the natural environment and the need to balance industrial growth in order to create profit and prosperity. GHRM applications have become essential to environmentally friendly practices, conservation of knowledge capital, implementation of global initiatives and programmes that imperatively influence the business of companies through technical soundness, good government, and influence among employees and top managers. The delivery of GHRM activities should benefit from training programmes aimed to enhance employee environmental awareness. The training should focus on the creation of the green project and the promotion of innovation in environmental performance. The performance evaluation should be designed to best encourage the usage of GHRM adequately and fairly (Lülfs & Hahn, 2013).

Notwithstanding the increasing interest and possible industrial advantages of environmental management studies, few academicians have investigated the history of employees' pro-environmental behaviour (Zibarras & Coan, 2015). The frequency of environmental deterioration and the rising shortage of resources have considerably expanded over the past few decades. Global anti-organisations have become increasingly active (Zsóka et al., 2013). To achieve the goal of GHRM which depends on employee's commitment towards Employees Green Behaviour (EGB) in the organization.

It is important to stimulate employees pro-environmental behaviour level (Robertson & Barling, 2013; Vicente-Molina et al., 2013). As a result, proactive behavior toward environmental protection at the individual level, and employees have the freedom to adopt work passion with strong positive emotions (Blok et al., 2015; Norton et al., 2015).

Theoretical Background

Figure 1 best describes the theoretical background in support of the GHRM process.

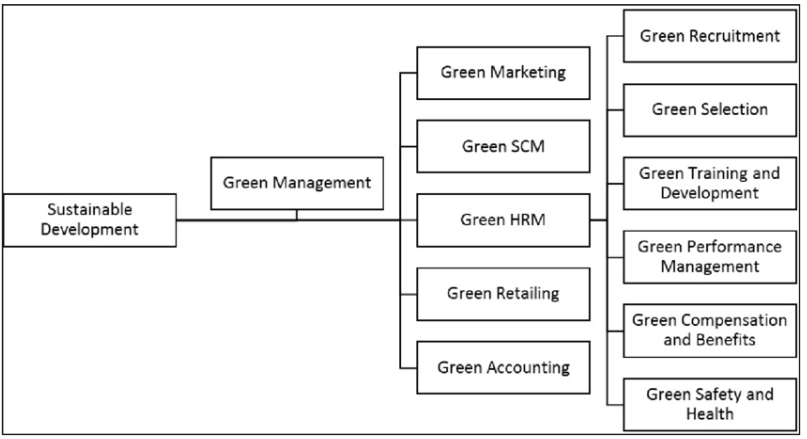

Figure 1. Green HR Process.

Green Hiring (Recruitment and Selection)

After the first screening of curriculum vitae (CVs), HR managers may make sure in the successive stages of the selection process that the appropriateness of newcomers for green practice is examined. A simple matter of changes to the surroundings during a meeting or dynamic group combining a business case with challenges in maintainability are two easy techniques to identify someone's biological awareness level. Finally, the green score for each contestant is to be given that finally ranks to fill the vacancy.

Green Performance

Performance measurement (PM) is a cycle that encourages employees to increase their professional capacity to better meet the organisation's hierarchical aims and objectives. As a consequence, the frameworks for performance assessment may contain management objectives for the creation of a greener organisation.

Although it is simple to perform in some positions, it is probably the most important barrier to the green performance appraisal to gauge and increase the knowledge about natural performance standards across various hierarchical divisions/units. In order to counter this, firms may start using global frameworks that help them collect data while also offering advice on how to handle it and acquire a statement, such as ISO 14001 or the Global Reporting Initiative.

Green Awareness

Green objectives, goals and performance appraisal (PA) duties of managers might include things such as creating green awareness in their groups and encouraging employees to participate in green business activities in the corporation.

Green Leadership

It can create and implement long-term initiatives better. As a result, wider activity will likely arise, such as promoting public action that supports long-term success, welfare and prosperity of all members of society.

Green Orientation

The induction programme for workers should be developed so as to integrate new employees into a green culture. The orientation session should emphasise companies' attention to green concerns such as wellness programme, safety and the green work environment.

Green Compensation and Reward

One potential method to assist environmental initiatives within the company is green compensation and rewards. In line with a tactical approach to contemporary firms develop incentives and rewards to promote environmentally friendly initiatives taken on their part by their staff.

Green Employee Relations

Work connections are part of the HRM, in which excellent working interactions between employers and workers are built. As a result of the connection and productivity, employee motivation and morale are increased. Employee relationships fundamentally include employee participation and capacity building. It also helps avoid and solve workplace problems that might affect the workplace.

Literature Review

Since several decades, numerous environmental concerns have come up. The governments of different nations have instructed companies and organisations, along with their operations, to focus on an environmental management programme (Mukherjee et al., 2020). Environmental sustainability has created more concern

for managers, governments, customers and managers. The HRM function takes part in continuing conversations and debates, in a fight among the stakeholders and in the problems and possibilities arising from the environmental concerns. The business domain sees the origin of GHRM in pursuit of environmentally sustainable company with the growing role of the HRM function (Mehta et al., 2015). Environmentally friendly policies should be enacted to make our planet a decent place to live in. Organisations can be public or private. If they are integrated into their activities, they can make important contributions to maintaining a greener environment (Zubair & Khan, 2019). GHRM initiatives to develop environmental awareness are substantiative to this objective and generate further knowledge gaps in this area. This study aims to explore green human resources management practices (GHRMP) based on academics' theoretical as well as actual studies (Kim et al., 2017). The results of the review show that it is beyond the scope of companies to gain green skills and offer employees the opportunity to engage in organisational endeavour. Organisations, which may restrict their efficiency in attempts to enhance environmental management (EM), do not use the entire spectrum of GHRM practices (Renwick et al., 2013). The green and non-green work result was improved in particular by individual employees. In turn, the benefits of GHRM's implementation at organisational level have been creating an environmentally sound organisational culture and work environment, increasing the efficiency of various resources, building a positive business image and enhancing economic viability. In this study, the literature on GHRM development and its advantages for organisations are broadly discussed (García-Machado et al., 2019).

Conceptual Framework

The notion of social identity provides the theoretical foundation for workers' psychological responses to a company's green initiatives. Individuals' social identities have a huge effect on how they behave, feel and participate in business contexts. This study is based on the social identity theory to examine the consequences of GHRM, such as eco-friendly behaviour, intention to stay and employee organisational commitment.

The current study explores the association between pro-environmental behaviour, namely green awareness (GA), GHRM and green organisational commitment (GOC) with the addition of green performance and rewards (GPR) as mediator. The research model is constructed based on a review of literature (see Figure 2).

The null hypothesis used for the study is as follows:

$$H_0 = \text{GA, GHRM and GOC are mediated by GPR.}$$

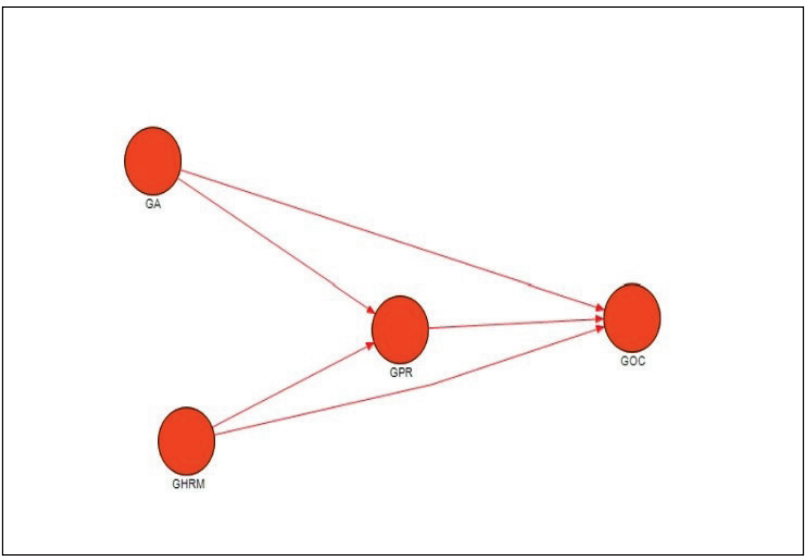

Figure 2. Research Model.

Research Design

Data

The purpose of the research article is to identify whether the adoption of GHRM in the organisation brought behavioural changes among employees towards organisational commitment that could lead to environmental sustainability.

The study is done by conducting the survey method on banking employees where all HRM processes are administered through disruptive technologies to attain the organisational commitment. The organisational commitment is a necessary prerequisite for bringing an exhibit employee's green behaviour for environmental consciousness. To fortify this objective, a survey is conducted that includes more than 300 employees from different public and private sector banks in the region of Varanasi. A total of 150 different branches of public and private sector banks were selected on the basis of the number of employees working in a particular branch. So, 500 questionnaires were circulated with statements to be responded on a 5-point Likert scale, and around 330 completed response sheets were collected yielding 66% of the response rate.

Methodology

For measuring the constructs mentioned in Table 1, their corresponding variables have been adopted in the survey. Responses to the above constructs and variables have been collected using a 5-point Likert scale, that is, 5 = to a great

Table 1. Constructs and Variables Used in the Study.

Constructs	Variables
1. GA	(a) Improving people's health and opportunities for a good life
	(b) Reducing water consumptions
	(c) Electricity management
2. GHRM	(d) Online recruitment and selection process
	(e) Training and development virtually
	(f) Cost effectiveness in GHRM
3. GPR	(g) Performance evaluation system
	(h) Employees' responsibility
	(i) Companies' reward for employees' environmental achievement
4. GOC	(j) Green team management and campaign task
	(k) Employees involvement and participation in green suggestion schemes
	(l) Developing green forum and exchange of their suggestion

Note: GA = green awareness; GHRM = green human resource management; GOC = green organisational commitment; GPR = green performance and rewards.

Table 2. Measurement Models.

	AVE	Composite Reliability	Cronbach's Alpha	Communality
GA	0.800188	0.923061	0.874750	0.800188
GHRM	0.559827	0.786827	0.611273*	0.559827
GOC	0.821629	0.932417	0.890856	0.821629
GPR	0.696626	0.873190	0.788670	0.696626

Note: * Must be higher than 0.7.

extent and 1 = not at all. On the other hand, considering loading factor above 0.70, all our resultant variable fit into the model.

The partial least square structural equation model (PLS-SEM) is employed in the study. This kind of technique is usually put into non-normal data. Validity and reliability of the scales were checked by factor loadings, average variance extracted (AVE), composite reliability (CR) and alpha values.

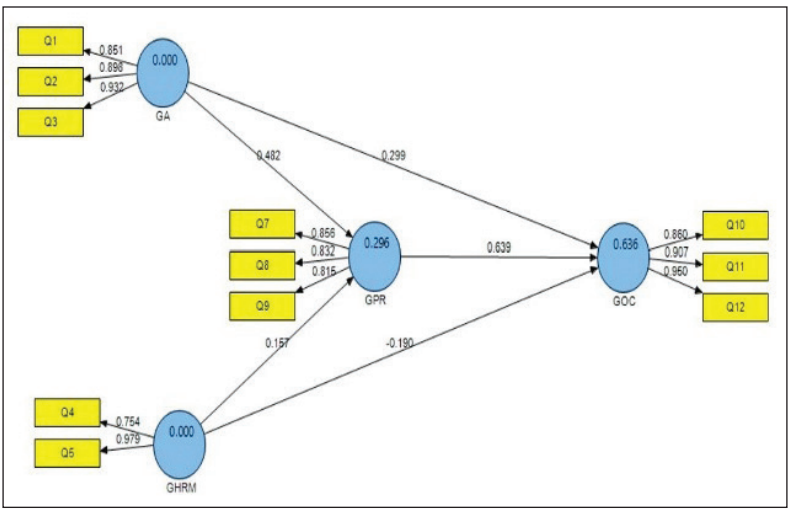

Figure 3. Path Analysis of GA, GHRM, GPR and GOC.

Table 3. Cross Loadings.

	GA	GHRM	GOC	GPR
Q1	0.851187	0.405240	0.462030	0.544916
Q10	0.493014	–0.019750	0.859619	0.571969
Q11	0.487204	0.113918	0.907035	0.772534
Q12	0.607703	0.072239	0.950169	0.657222
Q2	0.898090	0.227884	0.500693	0.346659
Q3	0.932446	0.068143	0.595566	0.491353
Q4	–0.031584	0.754213	–0.107573	0.125793
Q5	0.319600	0.979443	0.112573	0.301199
Q7	0.379189	0.469965	0.446476	0.856197
Q8	0.437974	0.249391	0.482012	0.831878
Q9	0.470549	0.058857	0.830655	0.815083

Results

Table 2 represents the measurement model, showing the results of pro-environmental behaviour, GHRM, GPR and GOC. First order factor loadings are counted for more than 70%, CR must also be above 70%, AVE should be above 50% and Cronbach's alpha should be above 70%.

From the perusal of Table 2, all constructs and variables were found to be non-significant except a variable under construct of GHRM. The Cronbach's alpha

under GHRM was found to be 0.611, which is less than 0.70 suggesting us to remove the variable to improve the result. The respective loading factor of GHRM is 0.58. After deleting the significant variable, the path analysis is presented in Figure 3.

Table 3 exhibits cross-loading correlation coefficient factors of all variables. According to the table, all correlation coefficients were found to positive, except for two.

There is no positive correlation between green team management and campaign task with GHRM activities. Further green recruitment and selection has no positive relation with green awareness and green organisation and commitment.

The result leads us to suggest that green practices are fully imbibed by the employees, so far, in the organisation.

Discussion and Conclusion

In the above analysis for GHRM, GA, GOC with mediating effect of GPR embed on environmental sustainability. We have collected cross-sectional data for conducting the study. We have used PLS-SEM 2 which is free available software to fortify the data analysis. Using the above results, we found that the Q6 where the loading factor was less than 0.7 exemplifies the cost involvement in GHRM is found to be significant and when similar treatment is done through correlation matrix of cross loadings exhilarate that there is need to motivate employees towards green campaign and knowledge dissemination.

Based on above discussions, mostly all variables under different constructs were found to be insignificant thereby mostly all hypotheses have been accepted. The study is conducted amongst different public and private sector banks in the Varanasi district of Uttar Pradesh, India, through primary data collection of 330 respondents. For analysing the adoptability of green behaviour among employees in the organisations, we have adopted structural equation modelling to examine the employee's commitment. The test result of the above tool of studying the four different latent variables leads us to conclude that path analysis and load factor exhibited stronger relationship through post-moderating effect, that is, latent variables lead towards green commitment. This leads us to conclude that organisations are trying to get environmental sustainability through GHRM practices which in turn gives them a status of an environmentally sensitive organisation as well as gives them some edge in this competitive environment.

Implications

Organisations should internalise their values, assisting employees in comprehending how the purpose and values relate to their specific positions

inside the business. This should help them to communicate more effectively, ensuring that communications represent the organisation's image consistently and often. Recruitment and selection methods, as well as the remuneration system, should integrate messages that represent the organisation's image regularly and often. GPR systems must resolve conflicts between practices and regulations in order to increase employee GOC. Organisations should foster an atmosphere conducive to development. It should incentivise workers to take on more duties consistent with their skills. The disruptive technologies are proving itself as a remedial measure to go green using less paperwork. In future also, many such changes will be inevitably important for one and all to adopt the frequent change. As a policy, government is also expecting from organisations to develop themselves as environmentally sensitive by providing impetus of employee's commitment. The research is intended to assist companies in gaining a better understanding of how to change conventional HRM practices into sustainable ones in order to maximise the benefits of GOC.

Limitations

Despite the fact that this research followed highly valid and trustworthy methodological and statistical processes, it, like all other studies, had certain statistical limitations. While the researchers have reasonable and enough literature support for all the procedures utilised in this analysis, each of these statistical tools is relatively sample size dependent. This indicates that with a larger sample size, outcomes are more likely to differ. First, as a consequence, a larger sample size may have shown entirely different outcomes than those reported in this research, impairing the accuracy and validity of the findings. Second, owing to time and cost restrictions, the research gathered data solely from Uttar Pradesh. Extending the research to various states of India might improve the study's generalisability. Additionally, the study sample for this survey was limited to 330 respondents. To get a much broader and a more precise view on the area, a bigger sample size may be beneficial. Because the research employed a standardised scale with certain changes, it is possible that other HRM elements impact workers' GOC.

Directions for Future Research

Similar research, using a case study technique, might be undertaken in banks. Comparative analysis among banks on the same subject may be an intriguing avenue for future research. Additionally, there are possibilities of comparative research between the two areas or on a greater scale by incorporating other states

and conducting research on the enhancement of GOC before and after the adoption of GHRM.

Acknowledgements

This research article entitled 'Economic Aspect of Implementing Green HR Practices for Environmental Sustainability' is incomplete without putting forward the exceptional encouragement provided by the Department and the colleagues. This work is carried along with research scholar who is working on GHRM had provided me with his research data and further assistance and rest the article is the outcome of our combined work.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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