ISSN 2249-5630

Nirma University Journal of Business and Management Studies

Vol. 6, Nos. 3 & 4; July - December 2023

Articles

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for Individuals	Rs. 500	US $ 15
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Claims for missing issues should be made within three months of publication.

Printed and published by Ms. Ritu Agarwal, Publication officer on behalf of Institute of Management, Nirma University and printed at M/s Shivkrupa Offset Printers, 3 J/K Block Ravi Estate, Opp. Gurudwara BRTS Bus Stop, Dudheshwar, Ahmedabad- 380004 and published at Institute of Management, Nirma University, Sarkhej Gandhinagar Highway, Ahmedabad 382481, Gujarat. Editor : Dr. Pradeep Kautish

** New Series*

Nirma University Journal of Business and Management Studies

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Contents

Articles

TELL-TALE BRAIN - A STUDY OF STORYTELLING FROM WORLD OF FANTASY TO REALITY OF SCIENCE

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1. INTRODUCTION

Since the beginning of the earliest cave paintings some 27,000 years ago, human communication has been delicately woven with the threads of storytelling. The significance of storytelling as a means of imparting wisdom from one generation to another has become increasingly evident over time. It can be observed in the behaviour of hunters, who after a successful hunt, would gather together in the glow of a crackling fire, to engage in the art of storytelling to recount their adventures. The practice of communal sharing played a crucial role in both the distribution of valuable insights and the promotion of safety among fellow hunters during subsequent hunts. By sharing their experiences and insights, hunters effectively safeguarded others from encountering similar pitfalls and dangers. This collaborative exchange not only enabled the spread of valuable knowledge but also acted as a guiding beacon, steering hunters away from potential risks and promoting a secure environment. The profound influence of storytelling on human evolution is undeniable, nurturing key traits such as collaboration, resilience in adversity, calculated risktaking, and the ability to seize fleeting opportunities. All this doesn't happen out of the blue, every emotion felt, the trigger aroused is all because of the science of the body that aligns with the story to produce the effects, which is termed brain science.

The extraordinary power of storytelling lies in its unique ability to immerse the audience in the storyteller's narrative world without requiring physical movement. This phenomenon is rooted in brain science, which unconsciously engages both the speaker and the listener during the storytelling process. Storytelling is an intrinsic part of human nature, deeply intertwined with the breadth of human experiences, diverse cultures, and historical events, with origins tracing back to the dawn of human existence. The narrator embodies multiple roles—a teacher, an inspirer, and an entertainer—reflecting the art's enduring versatility. In the modern era, storytelling continues to thrive as it has for millennia, forging profound emotional connections that transcend the constraints of time and circumstance..

The objectives of the present study are:

1. To understand the relation between storytelling and brain science
2. To identify important neurotransmitters responsible for immersive story telling
3. To carry out an experiment to estimate the impact of storytelling in academic setting with the knowledge of brain science

2. LITERATURE REVIEW

According to Gottschall (2013), it is an inherent characteristic of human nature to display a preference for narratives rather than mere facts. The incident underscores the rationale behind the powerful impact of bullet-point presentations in PowerPoint, even when complemented by the presenter's admirable charm. The activation of cerebral language processing centres is primarily observed when information is communicated in a direct and unembellished manner. In contrast, it has been observed that the deliberate crafting of a narrative that is rich in elaborate details, metaphorical subtleties, and dynamic characters elicits a holistic cognitive reaction, which extends to the realms of language processing as well (Higgins, 2016). The narrative creates an immersive environment for the audience, drawing them into an imaginative realm where their hearts race, and their skin tingles with excitement. In his scholarly works, Gottschall (2013) delves deeper into the concept of sharing stories and highlights the additional benefits it brings. According to Gottschall, one significant advantage of sharing stories is that it allows individuals to experience powerful emotions indirectly, without the necessity of firsthand experiences.

In a scholarly work by Antonio Damasio (2011), the remarkable ability of narratives to stimulate particular regions of the brain, as demonstrated in the research conducted by Uri Hasson was analysed. This phenomenon fosters a deep and personal connection between the audience and the story being shared. The human brain, an extraordinarily complex organ, comprises various specialised components, each with unique roles, including the distinct functions of the left and right hemispheres in cognitive processes. Specifically, the role of the left hemisphere in logical rumination and opinion formulation, while also investigating the contribution of the right hemisphere in the recollection of personal memories and experiences.

By understanding these distinct functions, one can gain valuable insights into the complex workings of the human brain and its influence on various cognitive processes. . According to Simmon and Levitt (2013), the reptilian segment of the brain plays a crucial role in the formation and maintenance of interpersonal bonds. On the other hand, the mammalian division of the brain is responsible for facilitating an individual's involvement in social networks. According to Goleman (1995), the act of storytelling serves as a means to reconcile the disparate domains of the human brain. Narratives with a clear and organised structure have the unique ability to engage both the left and right hemispheres of the brain, enhancing neural activity and facilitating the seamless integration of new information with existing knowledge. Storytelling has long been recognised as a powerful tool for building connections and conveying essential ideas effectively.

The limbic system, a complex network of neural pathways that interacts with the neocortex, serves as the foundation for establishing emotional connections in humans. According to the postulations made by Daniel Goleman in 1995, it can be argued that the evolved neocortex exerts control over the realm of emotions. Goleman's research on emotional intelligence highlights the interconnectedness of the brain's emotive regions with various circuits within the neocortex. This intricate network enables these regions to significantly impact the brain's overall functionin This intricate network of connections grants them a remarkable capacity to exert a significant influence on the overall functioning of the brain. According to Higgins (2016), the author's work provides valuable insights into the subject matter at hand. The research conducted by Higgins (2016) asserts that the art of storytelling is a complex cognitive process that engages various regions of the brain, resulting in a rich and immersive narrative experience.

This experience encompasses a rich tapestry of sensory details, emotional reactions, and critical evaluations. This blend evokes a profound emotional response in the recipient, encompassing a diverse spectrum of feelings—ranging from sheer joy to intense anger, from deep sorrow to empathetic understanding, and from passionate enthusiasm to moments of melancholic reflection.

In accordance with the findings of Yang M.H. (2011), the process of engaging with a narrative enables individuals to immerse themselves in an alternative reality, leading to a state where their immediate environment becomes less prominent. The act of engaging with narratives in an immersive manner has been found to enhance interpersonal bonds. According to Goleman (1995), the presence of physical manifestations such as clammy palms, rapid eye flutters, and accelerated heart rates may vary depending on the content of the narrative. The mirroring of facial expressions in alignment with the emotional flow of a narrative has been documented in numerous studies. This phenomenon underscores the intricate connection between storytelling and nonverbal communication. Facial expressions play a crucial role in conveying emotions and can significantly impact the audience's perception and understanding of a narrative. By synchronising facial expressions with the emotional tone, in a study conducted by Uri Hasson in 2010, the author explores the narrative dimension of communication and sheds light on the phenomenon of brainwave pattern synchronisation between the listener and the narrator as the story progresses. The occurrence described in the statement occurs in a spontaneous manner, but it is consistent with the fundamental principles of a scientific discipline known as "the neuroscience of storytelling." In a seminal study conducted by Uri Hasson in 2010, the researcher investigated various aspects of human communication and its neural underpinnings.

3. RESEARCH GAP

A lot of studies and literature reviewed outline the association of storytelling and brain science but limited literature is available to understand the important neurotransmitters and associated emotions felt during the process of storytelling. Understanding the same in a typical academic setting is an unexplored area. The earlier research on brain science was done under the supervision of medical assistants, but using a multimedia approach to stimulate the emotions felt in an academic setting is unique to the study.

4. MIRROR NEURONS

The power of narratives to leave lasting impressions on individuals and reshape interpersonal connections is a remarkable phenomenon. According to Gottschall (2013), it has been suggested that stories have a natural capacity to captivate the mind of the observer, effortlessly transporting them into the very essence of the narrative. This can occur through a complete immersion in the story or by identifying elements of one's own self within its intricate design (Simmon & Levitt, 2013). Assimilation is a complex process that enables the absorption of traits from fictional characters or the narrative as a whole, leading to a mental immersion into alternate realms. The phenomenon of complete immersion in a virtual environment has been found to elicit a profound sense of personal involvement, comparable to the experience of directly living through the events portrayed (Higgins, 2016).

After engaging with a captivating narrative, an individual's neural cells display synchronous activity, a phenomenon often referred to as neuron activity, which precedes the activation of mirror neurons.

Within the framework of human cognitive architecture, mirror neurons are activated when an observer perceives another individual performing a gesture that is imbued with emotion, often occurring without explicit intention (Simmon & Levitt, 2013). It can thus be inferred that an observer's cognitive perception mirrors the behaviours and emotions displayed, leading to the formation of neural symmetry. This phenomenon serves as the primary reason for the apprehension and discomfort viewers feel when a beloved character in a film or television show faces peril. In a study conducted by Higgins (2016), the sensorial panorama of the mind adeptly charts the various emotional fluctuations experienced by individuals, thereby eliciting a response that is deeply imbued with resonance.

In his seminal work, Stephens (1995) explores the concept of mirror neurons, a network of neural components that modulate in response to specific motor actions performed by an individual neuron. This modulation occurs concurrently with the assimilation of similar actions observed in others. In his study, Gottschall (2013) examines the perplexing phenomenon of individuals willingly exposing themselves to intense emotions during the climactic moments of cinematic narratives. The elucidation of the phenomenon is found in the nuanced reiteration of distress caused by mirror neurons within the human brain (Simmon & Levitt, 2013). The neurons covertly revive the distress that is portrayed on the screen, thus shaping the fictional realm into a cognitive representation where the reality of the narrative resonates within the realm of imagination (Higgins, 2016). The statement draws a synesthetic parallel, prompting individuals to instinctively mirror the sensations and excitement of their beloved characters, thereby fostering a sense of empathy. The proponents of the mirror neuron paradigm argue that immersing oneself in narrative tapestries leads to the activation of the mirror neuron matrix, which in turn stimulates the interplay of neurons (Simmon & Levitt, 2013). This phenomenon arises from the fact that individuals do not merely consume stories; instead, they actively visualise the scenes, internalise the emotions, and virtually engage in the unfolding narrative. Consequently, their cognitive faculties become immersed in a transformative interaction.

5. NEURAL COUPLING

In her notable work, Immordino-Yang (2013), a renowned researcher in the domains of human developmental psychology and neuroscience, has provided a comprehensive analysis of the complex processes that occur in the human brain when individuals are exposed to emotionally evocative narratives. Based on her observations, it has been noted that the brain stem, a crucial element involved in the regulation of essential bodily functions like heart rate and conscious breathing, experiences an increase in blood flow when individuals engage in the consumption of these narratives. The observed increase in neural activity has been found to promote overall physical well-being and balance within the body Murphy (2018).

In the process of interacting with narratives, individuals inevitably undertake a search for alignment between their own personal experiences and the narratives being conveyed. The cognitive undertaking elicits the activation of a specific cerebral component referred to as the insula. In a study conducted by Murphy (2018), The cognitive module facilitates individuals in navigating their personal experiences with a wide range of emotions, including but not limited to feelings of discomfort, elation, and repulsion. The innate connection individuals develop with characters in a narrative fosters deep engagement, often blurring the boundaries between their own emotions and those of the characters. This immersive experience plays a crucial role in fostering empathy.

In his thought-provoking TED talk, Uri Hasson (2004) delves into the amplifying effects of captivating storytelling. In this context, storytelling is being compared to a transcendent tool, serving as a conduit through which memories, visions, and philosophies are shared from one individual's cognitive realm to another's. In his work, Hasson (2004) emphasises the significant impact of narratives on the human psyche. Through their ability to shape judgements, mould sentiments, and induce a phenomenon known as "neural coupling" (Murphy, 2018), narratives hold a profound influence over individuals. The phenomenon of coupling, which bears resemblance to the concept of mirror neurons, is observed when active mirror neurons synchronise with the neural activity in the brain of the corresponding individual. Hasson's research provides noteworthy evidence demonstrating that cognitive resonance not only impacts linguistic processing centres, but also affects a range of sensorimotor pathways. The impact of different forms of descriptive language on cortical activation in the human brain is noteworthy—particularly the distinct effects of depictions of sumptuous meals on the sensory cortex and physical actions on the motor cortex. By analysing the neural responses to the stimuli, the intricate interplay between language, cognition, and cortical engagement can be heightened. One notable finding is the activation of the sensory cortex in response to the portrayal of a sumptuous meal. This suggests that the vivid depiction of a gastronomic experience has the ability to stimulate the sensory regions of the brain. The sensory cortex, known for its involvement in processing sensory information, appears to be engaged when individuals are exposed to rich descriptions of meals, which shows the power of language in evoking sensory experiences and highlights the potential for language to elicit cognitive responses. In contrast, the motor cortex is engaged when responding to descriptions involving physical actions, such as serving a tennis ball or feeling a pinprick. The motor cortex, responsible for planning and executing voluntary movements, appears to be activated when individuals are exposed to language that describes physical actions. This observation suggests that the motor cortex plays a crucial role in processing and responding to language related to bodily movements. Findings suggest that language has the ability to orchestrate a symphony of cognitive involvement by selectively activating different cortical regions. The description of a rich meal activates the sensory cortex, immersing individuals in a sensory experience. Conversely, descriptions of physical actions stimulate the motor cortex.

The study conducted by Hasson in 2016 investigates the captivating and puzzling concept of "neural coupling". This phenomenon occurs when individuals are in a dark environment, fully absorbed in listening to the gradual unfolding of a narrative. Intriguingly, it has been observed that the auditory cortex of the brain, which is primarily involved in the processing of auditory information, exhibits a remarkable ability to become activated and synchronise with the auditory stimulus (Murphy, 2018). The phenomenon of cognitive process synchronisation, similar to a well-coordinated dance, underscores the powerful effect of immersive storytelling in promoting aligned mental states. This process effectively brings together the storyteller and the listener in a mutually engaging intellectual exchange. In a study conducted by Zacks et al. (2005), the researchers aimed to investigate a specific topic. The formal designation for the phenomenon described as the merging of cognitive frequencies is known as "neural coupling." This concept represents the coming together of the cognitive oscillations exhibited by both the speaker and the listener and denotes the symbiotic nature of the coupling between a speaker and a listener. It specifically explores how the neural patterns firing in the speaker's brain resonate with the cognitive architecture of the listener, resulting in a profound sense of connection and mutual understanding. The phenomenon of cognitive rhythms aligning with one another gives rise to corresponding emotional reactions, thereby facilitating the development of strong and unwavering connections based on trust and empathy (Murphy, 2018).

In a study conducted by Hasson in 2013, the notion is put forth that the act of storytelling has the potential to foster a deeper convergence of perspectives. The study by Murphy (2018) highlights an interesting cognitive phenomenon, showing that certain areas of the brain can anticipate and interpret the listener's reactions even before the speaker has finished delivering their message. The observation indicates that individuals are actively predicting the future paths of the speaker's ideas which establishes a relationship between the neural responses of the speaker and the cognitive reactions of the recipient, and its impact on the comprehension and assimilation of the narrative's essence.

6. HORMONAL SCIENCE OF STORYTELLING

The impact of narratives on human behaviour is a significant and influential phenomenon, as evidenced by the research conducted by Zacks et al. (2005). These narratives have the power to affect individuals in both their physical and mental capacities, leading to far-reaching consequences. The intricate interaction between narratives and the human mind demonstrates their ability to engage various cognitive areas, while also triggering the intentional release of specific neurotransmitters. The orchestrated release of stimuli plays a crucial role in initiating a series of cognitive and emotional reactions, which in turn, triggers a wide range of thoughts, sentiments, and subsequent behaviour that is characterised by a complex interplay of hormonal dynamics (Murphy, 2018). The complex dynamics that occur as the circulatory system moves through a variety of glands within the human body. This complex journey initiates a carefully coordinated process of hormone production.The physiological encounters experienced by individuals give rise to a range of emotional states, which are influenced by the activation of hormonal trigger points (Zacks et al., 2005). The focal point of this narrative-driven physiological symphony lies in the extraordinary occurrence of chemical peptides and neurotransmitters being elicited as a result of the storytelling process.

The facilitation of the remarkable connection between narratives and neural intricacies is made possible through the utilisation of neural coupling mechanisms. These mechanisms are skilfully coordinated by a complex ensemble of mirror neurons by the utilisation of neural coupling in the narrative's journey through the intricate labyrinth of the human mind. In doing so, it seeks to clarify the activation of various chemical messengers that are key in coordinating the listener's cognitive and emotional responses. The orchestration in this context serves a dual purpose. Firstly, it enhances the cognitive focus of the listener, allowing for a heightened level of engagement with the material being presented. Secondly, it establishes a deep and meaningful connection with the unfolding narrative (Zacks et.al, 2005). The reciprocal relationship between narratives and neurobiology is evident in a captivating loop, where the act of storytelling serves as a conduit for the orchestrated release of various hormonal manifestations. The captivating nature of a specific auditory sequence triggers the release of various chemical peptides and neurotransmitters into the circulatory system. Consequently, this phenomenon engenders an elevated level of alertness and fosters a deep sense of engagement with the fundamental elements of the narrative Murphy (2018).

6.1 Oxytocin

Based on the research conducted by Dr. Paul Zak, a renowned neuro-economist, in the year 2014, it has been determined that narratives possess an intrinsic ability to foster trust and establish credibility. In his scholarly work, Dr. Zak delves into the phenomenon of individuals developing a strong sense of identification with a protagonist in a narrative. He suggests that this identification often results in a blend of action and empathy. This observed phenomenon can be linked to the release of oxytocin, a neurochemical, within the brain. Oxytocin, often referred to as the "love hormone," is a neuropeptide that is released in various social and intimate contexts. It is often linked to experiences with loved ones, such as warm embraces and interactions with close individuals. Additionally, oxytocin release has been observed in response to the consumption of chocolate, further highlighting its potential role in facilitating feelings of affection and connection. The biochemical cascade that elicits emotions related to trust, faith, and interpersonal connection, ultimately leading to the promotion of pro-social behaviour characterised by solidarity and camaraderie.

In a groundbreaking study conducted by Dr. Zak in 2014, the role of storytelling in the production of oxytocin was thoroughly examined. The study revealed that storytelling has the potential to act as a catalyst for the release of oxytocin, a hormone associated with social bonding and trust. This effect was especially noticeable in stories with well-developed characters. The increase in oxytocin levels due to narrative engagement is especially apparent when individuals actively empathise with the desires, hopes, and stories of fictional characters. The present experience demonstrates the significant influence of oxytocin, thus acting as a powerful catalyst for fostering collaborative endeavours and nurturing trust. The attributes, when considered within the framework of human interactions, assume a position of utmost significance. They facilitate the collective adaptation of individuals to complex circumstances (Zunshine, 2006). Considering these factors, it is clear that narratives capable of capturing the audience's attention and delivering emotionally impactful content have the potential to create lasting impressions on the cognitive structure of the individuals within the audience. Through the utilisation of empathy and the evocation of visceral responses, narratives can construct a complex network of interconnectedness within the human psyche. This network grants individuals a position of authority within the domain of social interactions.

6.2 Cortisol

In the domain of literary involvement, individuals who possess a strong passion for reading frequently immerse themselves in the captivating content of a book, eagerly awaiting the gradual development of the story's rhythm and flow (Murphy, 2018). At critical moments in the narrative, a distinct feeling of excitement or tension may envelop the reader, evoking physical responses such as sweaty palms and an increased heart rate. The wide range of sensations experienced by individuals can be attributed to the regulating effect of cortisol, a key hormone that coordinates the cognitive process of actively perceiving and integrating the narrative. The potential lack of guidance from cortisol could potentially lead to a narrative's inability to maintain the reader's undivided attention, as suggested by Zak (2004).

The recognition of the impact of narratives on emotions goes beyond just the regulation of cortisol Oxytocin, a significant participant in the emotional dynamics, plays a crucial role in fostering a sense of empathy towards the various characters that inhabit the narrative environment (Zunshine, 2006). The convergence of cortisol and oxytocin gives rise to a phenomenon known as "transport," in which the reader's emotional state becomes deeply entwined with the psychosomatic encounters of the characters in the narrative. In a scholarly study conducted by Yang (2014), the concept of "transport" is explored. The author suggests that this phenomenon happens when individuals experience a blending of human empathy, reflection, and understanding. As a result, the destinies of both real and fictitious characters become intertwined within the temporal framework of the narrative. This notion aligns with the findings of Zak (2004), who also delved into the subject matter.

The convergence of profound emotions in this context creates a connection that has the capacity to bring about lasting transformations in human behaviour and beliefs (Armstrong, 2013). The impact of influence is significantly heightened when the narrative aligns closely with the values and beliefs of its audience, thereby inspiring them to take decisive action (Zak, 2004). In instances characterised by a deep narrative resonance, which evokes introspection and prompts a call to action, the emotional connection established through the phenomenon of "transport" has the potential to exert influence over individual behaviours and belief systems (Zunshine, 2006).

6.3 Dopamine

Within the domain of human interaction with narratives, a captivating occurrence emerges whereby individuals exhibit a tendency to expect a resolution that bestows upon them a deep sense of satisfaction and fulfilment (Zunshine, 2006). The complex emotional state that is highly desired by individuals is attributed to the intricate orchestration of a neurochemical entity known as dopamine. The hormone oxytocin is known for its ability to create strong bonds between individuals, including those formed with fictional characters. However, it is the neurotransmitter dopamine that plays a crucial role in acknowledging that narratives do not seek a satisfying outcome, providing individuals with a sense of reward that can be similar to real-life experiences (Mar, 2004).

The acknowledgement of dopamine's influence extends beyond the realm of pleasure-based sensations, as it plays crucial roles in various domains such as learning, retention, and the facilitation of motor functions (Zunshine, 2006). According to Zak (2004), the activation of dopamine is initiated by narrative craftsmanship, resulting in the formation of an engaging narrative. This phenomenon not only enhances individuals' ability to concentrate but also ignites their inherent motivation. The cognitive processes involved in memory formation highlights the potential of narratives as a tool for enhancing memory retention. It is imperative to universally conclude with a state of euphoria; there are numerous instances in which outcomes that are less than optimal occur (Armstrong, 2013). Paradoxically, the narratives lack a conventional happy ending, possess a remarkable ability to convey valuable lessons regarding potential pitfalls to be avoided and can prompt significant changes in individual behaviour (Zunshine, 2006). The role of dopamine in driving changes in behavioural patterns and its impact on storytelling is significant of how dopamine orchestrates a compelling response, thereby serving as a potent instrument for catalysing change in individuals. By exploring the connection between dopamine and behavioural changes, this study highlights the transformative power of storytelling. The inclusion of failure and negative outcomes in narratives is of significant importance in the field of pedagogy.These narratives have the ability to deeply resonate with learners and effectively translate into practical real-world implications.

6.4 Endorphins

The incorporation of humour into a narrative confers upon it a noteworthy capacity, not only to entertain but also to initiate a series of neurochemical processes that have a substantial influence on both emotions and cognition (Armstrong, 2013). Similar to the physiological response triggered by intense physical activity, the experience of amusement resulting from a skilfully constructed humorous narrative induces the secretion of endorphins. These endorphins travel along neural pathways until they converge within the limbic system, as suggested by Zunshine (2006). The centre of emotional experience and decision-making acts as the main area for a deep interaction.Increased levels of endorphins have been found to have a significant impact, closely linked to the cognitive mechanisms that govern decision-making. The intricate interplay of neurochemical processes within the human brain serves as the backdrop for the emergence of a narrative, woven together with deliberate instances of humour, which in turn assumes a profound and transformative function (Zunshine, 2006). In addition to its primary function of inducing amusement, the interplay between humour and other individuals serves as a potent driver for the development of empathy and likability. The complex link between a narrative and its audience has a major impact, going beyond simple interactions and creating a range of effects. This bond not only fosters trust but also cultivates a profound sense of affinity within individuals.

To explore the multifaceted effects that occur as a result of the inundation of endorphins within the neural landscape. The phenomenon of serenity has been observed to have a profound impact on the human mind, particularly in terms of enhancing focused attention and stimulating the emergence of creative ideas. This state of calm surrounds the individual, providing an ideal setting for cognitive processes to thrive. By delving into the depths of one's consciousness, serenity acts as a catalyst for unlocking the vast reserves of creativity that lie dormant within. It is important to note that the intricate dance of neurotransmitters involved in this process extends beyond just endorphins (Armstrong, 2013). Serotonin and adrenaline, two prominent neurochemical entities, have been identified as significant companions in various physiological and psychological processes. These compounds are essential in regulating various bodily functions and are known to have a significant impact on human behaviour and emotions.The combined efforts of these elements enhance the process of assimilation, thereby amplifying the narrative's impact and effectiveness.

In the culmination of this narrative expedition, a noticeable metamorphosis occurs. According to Armstrong (2013), the individual who was previously a passive recipient of the narrative experiences a transformation in which they gain enlightenment, a heightened sense of optimism, and improved cognitive abilities. The impact of the narrative resonates, leaving a lasting impression on both cognitive processes and affective experiences (Zunshine, 2006).

The exposition aims to delve into the intricate interplay between narratives infused with humour and the intricate symphony of neurochemical processes that regulate emotions and cognition. This topic was explored earlier by Murphy (2018) and forms the basis for the current research. In the literary realm, when readers navigate the intricacies of a narrative skilfully embellished with comedic elements, they embark upon a journey that ultimately leads to an elevated state of consciousness and self-reflection (Armstrong, 2013). The present investigation serves to enhance our understanding of the neurological mechanisms involved in narrative engagement, while also highlighting the significant role that humour plays in fostering emotional connection and cognitive enrichment.

7. RESEARCH METHODOLOGY & EXPERIMENT

In the chronicles of human history, storytelling acted as a timeless medium for the dissemination of wisdom with the exchange of lived experiences, and engagement of audiences. The emerging research shows its neurological implications in the process of storytelling. The methodology used for the study is to understand the important neuro transmitters that align with brain science to help and align with the process of storytelling. A visual story which has all elements of live storytelling was selected to make the experimental group (students of management studies) immerse in a multimedia approach of learning crisis management. An experiment with intervention program was carried out with two different groups with varied approaches to teach the same story. The responses of the emotions felt were collected in the form of a questionnaire after the intervention program which was tabulated for analysis. The discussion and findings showed the impact of immersive storytelling which was through a multimedia approach.

To connect storytelling to brain science, the present study conducted an experiment involving undergraduate students enrolled in management studies. The experiment comprised of eighty participants, divided into two distinct groups: Group A, designated as the “controlled group,” consisted of forty individuals, and Group B, as the “experimental group,” also comprised forty participants. Group A underwent a controlled experimental condition, exposed solely to a textual rendition of the story “An Old Woman and the Genie,” while Group B experienced a multimedia-rich approach. This involved a visual representation of the narrative, enhanced by effective storytelling techniques, alongside the textual component. The narrative’s main focus was to highlight the importance of crisis management principles and strategies. After the intervention programme, both Group A and Group B completed a comprehensive questionnaire, to understand and analyse of the narrative's content. Through an intensive analysis of student's responses, the study aligned it with concept of brain science after which the results were tabulated and analysed. An interactive session with few participants gave away added input to the study.

The study revealed that combining storytelling video content, engaging all senses, with textual resources through multimedia integration improved understanding and comprehension of the storytelling.Following is the tabular and graphical representation of the learner's understanding of different emotions felt during the process of storytelling:

7.1 Tabular representation of results of control and experiment group

Table 1: results of control and experiment group

S. No	Emotion felt	Number of Students (control group)	Number of Students (experiment group)
1	Mirroring of neurons	2	22
2	Neural coupling	5	18
3	Oxytocin effect	11	31
4	Dopamine rush	2	28
5	Cortisol feels	5	22
6	Endorphins	25	35

7.2 Graphical representation of results of control and experiment group

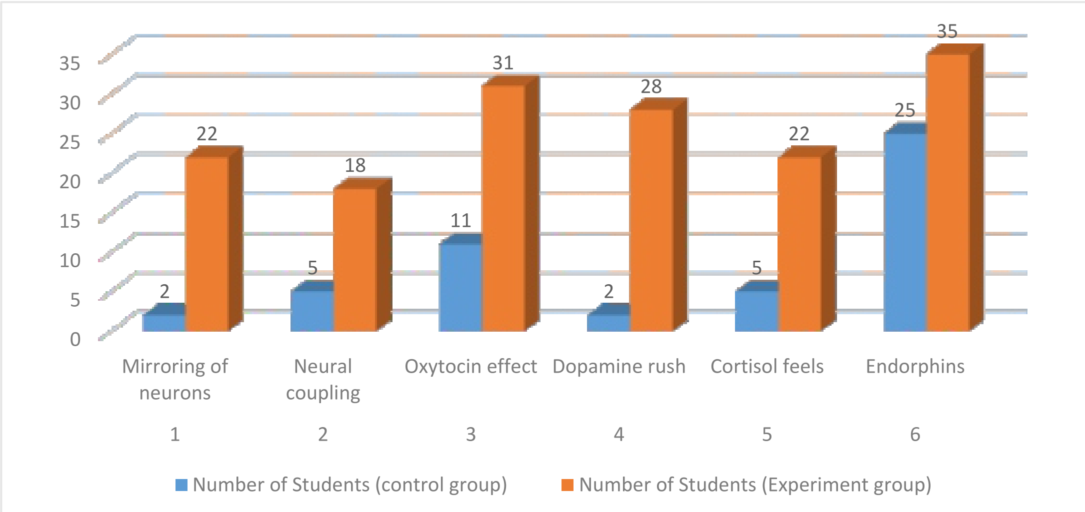

Fig1: results of control and experiment group

7.3 Tabular representation of percentage of control and experiment group

Table 2: percentage of control and experiment group

S. No	Emotion felt	Control group %	Experimental group %
1	Mirroring of neurons	5%	55%
2	Neural coupling	13%	45%
3	Oxytocin effect	28%	78%
4	Dopamine rush	5%	70%
5	Cortisol feels	13%	55%
6	Endorphins	63%	88%

7.4 Tabular representation of percentage of control and experiment group

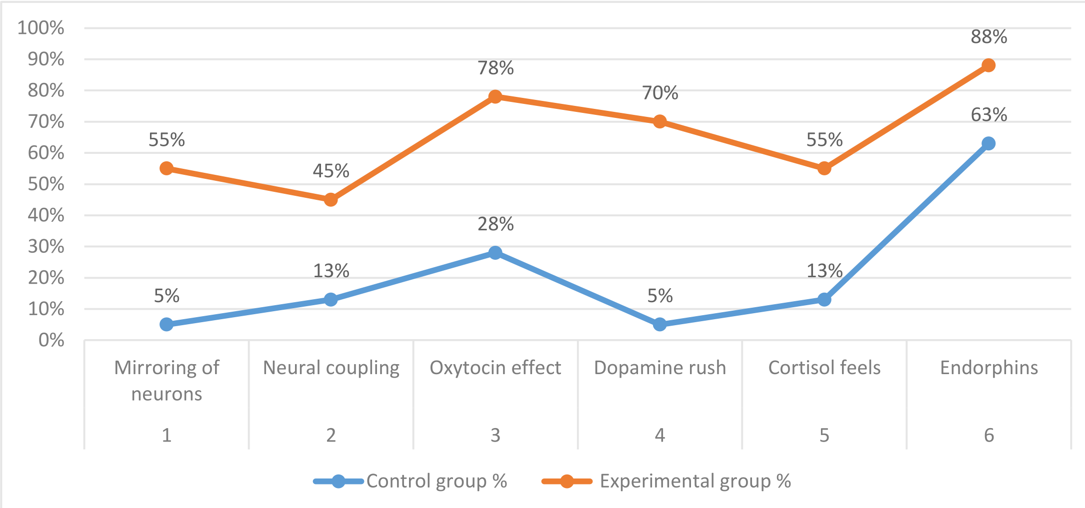

fig 2: percentage of control and experiment group

8. DISCUSSION & RESEARCH IMPLICATIONS

The current study thoroughly examined the differences observed between two groups: one with controlled conditions and the other with experimental conditions. The study focused on how specific emotions impact students, exploring the concept of brain science were shown in Table.1. Emotions, as depicted in visual representations, trigger different brain pathways and the release of chemicals that affect thinking, mood, and behaviour. Through Table 1, it's clear that the most prevalent emotions are endorphins, making up 63% of the total, followed by oxytocin at 28%. Endorphins, the body's natural painkillers and mood boosters, are released during physical activity and positive experiences. Oxytocin, which strengthens social bonds and trust, also plays an important role. Other emotions, such as dopamine linked to pleasure, contribute to a lesser extent.The study also observed mirroring neurons, where the brain mimics others' actions and emotions, though to a lesser extent. Endorphins increase by 88%, oxytocin by 78%, and dopamine rush by 70%. These neurotransmitters are vital for emotional regulation and impact behaviour and well-being. The results suggest that the experimental group experienced higher levels of satisfaction, social connection, and reward-driven feelings compared to the control group. The study also looked at mirroring neurons and cortisol, with each showing a substantial influence on emotional experiences. The experimental group's findings show greater engagement, motivation, and enthusiasm for learning, driven by higher levels of oxytocin and dopamine. In contrast, reduced neuronal mirroring and lower cortisol release indicate less stress and emotional detachment compared to the control group. The study highlights the significant impact of emotions in storytelling in an educational environment. Enhanced positive emotions like pleasure and connection improve engagement, motivation, and performance. Integrating neuroscience knowledge with storytelling in education can better address students' emotional needs, leading to more effective teaching and learning experiences.

9. Findings

- In both the controlled and experimental groups, the most common emotional responses were endorphins and oxytocin.
- The controlled group showed less activity related to neuronal mirroring and the dopamine rush.
- There were clear differences in emotional states between the experimental and controlled groups. The experimental group had higher levels of endorphins, oxytocin, and dopamine rushes compared to the controlled group.
- The experimental group had lower levels of neuronal mirroring and cortisol sensations compared to the controlled group.
- Endorphins are natural painkillers and mood enhancers that are released during positive experiences.
- Oxytocin plays a key role in bonding, trust, and social connections.
- Neural mirroring is when the brain imitates the behaviours and emotions of others, creating a subconscious connection.
- A dopamine rush is a feeling of excitement in response to rewards or happiness.
- Cortisol is a hormone released during stressful situations, increasing alertness and arousal.
- Positive emotions such as satisfaction, social connection, and rewards boost engagement and improve academic performance in learning environments.
- By combining neuroscience and storytelling, effective learning environments can be created that cater to students' emotions and preferences.

- The experimental group showed more enthusiasm, motivation, and engagement during learning compared to the controlled group, highlighting the importance of emotion-centered learning methods.

10. SCOPE AND LIMITATIONS

The research aimed to explore the influence of storytelling on brain science in an academic setting. The study can be expanded to include students from various academic backgrounds. Expanding the pool of participants allows researchers to gain a better understanding of how storytelling influences academic success in different areas. The findings showed a positive link between using storytelling and improved student engagement, motivation, and academic performance.The study limits itself to the relatively small sample size and the narrow focus on a specific aspect of management studies.

11. CONCLUSION

Maya Angelou's enduring words serve as a poignant reminder that, although words and actions may eventually fade from our memories, the emotions they evoke remain with us, leaving a profound and lasting impact on our experiences and relationships. Angelou's wisdom impresses on how emotions shape memories and perceptions. The emerging research suggests that storytelling in education can evoke similar emotional responses. Compelling stories do more than inform; they actively engage students, inspiring them and enhancing their academic performance. Storytelling goes beyond merely sharing information—it fosters a comfortable and enjoyable learning atmosphere. The process stimulates creativity, empathy, and a more compassionate approach to teaching. Integrating storytelling into education benefits both students and teachers. Teachers can transform their lessons into captivating narratives, enriching the learning experience. Understanding the science of storytelling helps educators create stories that deeply engage students and make learning more effective.

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BOOK REVIEW

PRADEEP KUMAR MISHRA, MICROFINANCE MANAGEMENT, CENGAGE LEARNING INDIA,

2022, 210 PP., INR 275. ISBN: 978-9353501617 (PAPER BACK).

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Pradeep Kumar Mishra, Microfinance Management, Cengage Learning India, 2022, 210 pp., INR 275. ISBN: 978-9353501617 (Paper Back).

The book 'Microfinance Management' focusses on five broad areas of microfinance. While the first section introduces various aspects of microfinance, the second and third sections discuss the operational, monitoring and evaluation aspects in the arena of microfinance. The regulatory environment and the strategic issues in microfinance are lucidly discussed in the fourth and fifth sections of the book.

The book starts with a reference to Shiller (2012), who states that microfinance has resulted in the democratisation of banking services. While the global microfinance industry had a loan portfolio of USD 114 billion and covered 139 million low-income clients as in 2017, the Indian contribution to the loan portfolio is about USD 19 billion and covers 77000 people in the Non-Banking Financial Company-Micro Finance Institution NBFC-MFI sector (which comprises of 28% of microfinance in India) as in 2018.

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The evolved definition of microfinance includes both financial intermediation and social intermediation. Financial intermediation in this context entails providing financial services (savings, credit, insurance, remittance, pension and all kinds of related services) to low-income clients, including the self-employed. Social intermediation services include group formation, development of self-confidence, training in financial literacy and management capabilities among these members in the groups. Additional features include doorstep services, without collateral and simplicity in procedures.

Microfinance evolved both in the international and Indian contexts. International initiatives included Self-Employed Women's Association (SEWA) Bank in India, Accion International and FINCA bank in Latin America, Grameen Bank in Bangladesh and Bank Rakyat Indonesia (BRI). In India, we saw the Integrated Rural Development Programme (IRDP), Rashtriya Mahila Kosh (RMK), Pradhan Mantri Jan Dhan Yojana (PMJDY), NABARD's SHG Bank Linkage Programme (SBLP), National Rural Livelihood Mission (NRLM) and many more. In a social context where common human beings are struggling to meet both ends with limited resources and employment opportunities, the self-help groups (SHGs) started to form unionised groups and borrowed money to establish small businesses to enhance the lives of the people. Today the SHGs in many parts of India are making huge success in uplifting people out of poverty in villages like the IT industry in cities.

Three models of microfinance work in three types of microfinance models, viz., the SHG-bank linkage model, the microfinance-institution model and the business correspondent model. In the SHG-bank linkage model, SHGs are promoted or facilitated by self-help-promoting institutions (SHPIs), which are in turn funded by donors, the government and sometimes even the banks. When these SHGs become capable enough, these SHPIs facilitate and link them to banks for further loaning. Microfinance institutions (MFIs) are generally commercial organisations that generate their own resources through equity and/or debt and lend it to SHGs, joint liability groups (JLGs) or Grameen groups. JLGs are a group of five people who come together to take a loan from an MFI. If one of the persons is not able to make the payment due, the other four members are liable to make the payment. Grameen groups are also a five-member group from the same village, and hence, these groups are subunits of the whole village. They work on the recovery of loans through peer pressure. Business correspondents (such as NGOs, MFIs, post offices) operate on behalf of a bank to extend the financial services. Their role includes identification of clients, collection of applications, disbursal of loans, collection of deposits, collection of third-party products and delivery of payments and remittance instruments.

There are many benefits and limitations of microfinance. Benefits include providing financial services to the poor people, who otherwise will remain unserved or served at higher costs. Microfinance helps in increasing their income and asset ownership. MFIs have always provided a higher recovery than other financial institutions. However, the limitations include the higher cost of microfinance when compared to banks, and they operate in an adverse competition environment from banks, adverse policy frameworks and alleged to follow coercive practices for recovery.

Microfinance can be seen both from the development perspective and the market perspective. While the development perspective considers the community as the beneficiary, sources of funds and financiers are grants and donors/CSR funds/government, respectively. The market perspective considers the community as clients, while the sources of funds and financiers are debt/equity and investors. While the focus of intervention is institution building and the goal is the empowerment of the community from the developmental perspective, it is the efficient financial services and financial inclusion, respectively, from the market perspective. Cashflow-based financing is resorted to as compared to asset-based financing in microfinance.

Section II of the book focusses on the institution-building operations of the SHGs, microfinance products and services and their delivery, as well as product development in microfinance. An SHG is a group of 10–20 members from the same locality and having some degree of homogeneity or affinity, be it in terms of caste, socio-economic status, place of origin, community, blood or occupation. They come together to meet at regular intervals, promoting thrift and credit activities, promoting enterprising activities and raising the voice in the interest of members. There are four stages of the SHG cycle: SHG formation which takes 3–6 months and includes initial meetings, identification of members, resolution and election of office bearers, establishment of rules and regulations and bank account opening. Strengthening of internal processes takes 6–9 months, which involves internal lending, training of office bearers, training of members and strengthening of record keeping. Enterprise promotion and bank linkage take 12–18 months when the identification of the enterprise, development proposal, bank loan application and fundraising, handholding for running the enterprise and repayment of loans happen. The last stage of withdrawal of the facilitating agency takes 6–12 months, where federation building, facilitation of independent decisions and handing over take place. While SHGs provide benefits such as economies of scale, enable collective learning, promote democratic culture and ensure capacity building (Fernandez, 1995), they are time-, cost- and resource-consuming, may have fragile groups without affinity and dummy members and may be used as a channel for political purposes.

There is a wide range of financial and nonfinancial services provided by the SGPIs and MFIs. Financial services include savings products such as savings banks, fixed deposits, recurring deposits, festival savings and savings for marriage, whereas nonfinancial services include institutional building, technical services (fishery and agriculture experts, veterinary services) and business development (through market research, development of new markets, marketing, etc.). Financial services also include microcredit (for investment purposes, consumption, life cycle needs, emergency needs and improving quality of life), microinsurance, micro pension, remittance and micro-leasing.

Delivery of products and services highlights the 5 C's of credit: character (the credit history of the borrower), capacity (repayment capacity), capital (equity contribution by the borrower), collateral (security for a loan) and conditions (terms of borrowing, interest rates, the purpose of loans, moratorium period and other terms & conditions). This section also highlights the credit cycle, which includes identification of customers, loan application, initial screening and verification, detailed credit appraisal, credit approval and decision, documentation and disbursement, monitoring and closure and feedback. Delivery of products and services is about people, systems and organisation structure. The redressal mechanisms work based on grievances received from the customer in an inverted top–down approach, starting from the clerical person to the highest authority where the institution strives to maintain impartiality.

The product development in microfinance focusses on understanding customer needs, generating product ideas, conducting cost-benefit analyses, designing prototype and pilot tests, launching of new products and reviewing and analysing of the new product. One of the major and remarkable advantages of microfinance is releasing people from the iron fists of moneylenders who charge exorbitantly from 24% to 60% per annum, which generates a vicious cycle of debt leading to social disturbances and disasters like suicide.

Section III of the book deals with the monitoring and evaluation in microfinance, where impact assessment will be evaluated through the grading process of SHGs. The grading process takes into account the meetings, attendance, savings, interloaning, repayment, record maintenance, rotation of group leaders, credit history, percentage of members taking income-generating activities and utilisation of bank loans, etc. Further assessment of SHGs involves profitability ratio analyses, solvency and liquidity ratio analyses, asset quality ratio analyses and efficiency and productivity ratio analyses. Businesses today have to perform equally in aspects relating to people, the planet and profit. Fraud, cheating, imprudent decisions and misbehaviour of the companies are no more tolerated by the stakeholders of the firm. Responsible financing and social performance management (implementation of the social goals) are the keys to success for such financial organisations.

Section IV of the book discusses the regulatory environment for microfinance. Microfinance was unregulated from 1990 to 2010. Although regulatory provisions were exerted in bits and pieces, moneylending was a state subject. December 2011 saw an issue of a new set of regulations by the RBI for microfinance institutions. Microfinance bills were prepared both in 2006 and 2012, but they were not converted into acts. A new set of differentiated banks, i.e., small finance banks (SFBs) and payment banks (PBs) was a significant development in 2015. SHGs have been considered as a separate sector in the priority sector lending. KYC verification of the office bearers is sufficient for opening the SHG account. An NBFC-MFI, a separate category for the business of microfinance, should have a net owned fund of Rs 5 crores (Rs 2 crores if the organisation is registered for the NE states) and should have 85% of its net assets as qualifying assets.

Qualifying assets include those loans disbursed to rural (urban) households which is a maximum of Rs 1,00,000 (Rs 1,60,000). Such loans should not be more than Rs 60,000 in the first cycle and Rs 1,00,000 in the subsequent cycles. No collaterals are asked for the loan, and payment can be weekly, fortnightly or monthly. The total loan towards income generated should not be less than 50% of the total loan by the MFI. Loan price can be the sum of the cost of funds and margin (10% or 12% depending on the size of the portfolio as applicable) but should not be more than 2.25 times more than the average base rate of the five largest commercial banks. No penalty for delay in payment or security deposit/margin from the borrower. No more than two MFIs can lend to the same borrower. A person cannot be a member of two or more SHGs and JLGs. Only time will tell whether such regulations of the MFIs by the RBI have been effective.

Section V of the book highlights the strategic issues, which include the crises, the funding and the governance issues along with technology and transformation. Two important crises that affected the microfinance industry are the Andhra Pradesh crisis of 2010 and the demonetisation of the crisis of 2016. While the objective of the MFIs was poverty alleviation, it was alleged that promoters of MFIs amassed a lot of wealth, MFIs used coercive mechanisms for loan recovery, proper training was not imparted to new employees who became devoid of the values specific to the microfinance industry and there was a competition between the state and the MFIs. Learning from the crises was to do away with the geographical concentration of loans. In terms of funding, the author highlights that in the era of angel investors and venture capitalists, there is no dearth of investors for microfinance. However, the transformation of the capital into effective utilisation and income generation remains a challenge to the boards, as their initial objective is to build socio-economic, financially stable groups. Public, private and individual investors dominate the funding in the grant-based, debt funding-based and the equity funding-based financing.

Governance in microfinance focusses on the various stakeholders such as the MFIs, SHPIs, support organisations and people; the regulator and the prime motive should be safeguarding the interest of the low-income group. Operational risks, credit risks and concentration risks are to be focussed. Nomination committee, audit committee, disclosure and internal control systems should be in place. Similarly, technology application and adoption in microfinance is the key to financial inclusion and poverty alleviation. Fintech companies are booming, thereby providing solutions for the smooth flow of money between providers and users of funds. Moreover, the institutional framework and organogram of MFIs are changing drastically due to fast market forces. However, there should not be a mission drift for the microfinance industry. This industry is there to stay and grow.

Microfinance is emerging as a powerful tool for poverty alleviation, although it is a cost-effective mechanism of providing financial services to the poor. Some practical issues of microfinance that could have been included are lack of product diversification, customer overlapping and duplication, consumption-based individual demand for loans without mitigation measures and high interest rates in the microfinance sector.

Professor Pradeep Kumar Mishra has beautifully brought into the limelight many issues related to the microfinance industry. The book not only provides a coherent understanding of the industry as such but also gives a different perspective of looking of finance through the lens of development economics. If we were to criticise the book, we may say that some of the aspects could have been explained using data visualisation. However, the book deserves a word of praise for its contextual clarity and comprehensive coverage.

TRENDS IN BRAND LOYALTY WITH RESPECT TO TOURISM: A BIBLIOMETRIC ANALYSIS FROM 1990 TO 2022

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ABSTRACT

This bibliometric analysis examines the emerging trends in brand loyalty within the tourism industry from 1990 to 2022. The study focusses on identifying the key themes, methodologies and research directions related to brand loyalty in tourism. We conducted a systematic search of academic databases and selected a total of 246 articles for analysis. The study revealed that the concept of brand loyalty has evolved over time, and new research areas have emerged, such as the impact of social media platforms on brand loyalty. The study also identified the use of various research methods, including quantitative and qualitative methods, to investigate brand loyalty in tourism. Overall, this analysis highlights the emerging trends and future directions in brand loyalty research within the tourism industry, which can help inform policymakers, industry practitioners and researchers.

Keywords: *Brand Loyalty, Tourism, Bibliometric, Biblioshiny, VOSviewer*

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INTRODUCTION

Loyalty in a business gives a strong consumer base, and due to this, loyalty has gained a lot of attention from academicians and professionals (Wilkins et al., 2009). Achieving brand loyalty is considered a yardstick for measuring the success of business strategy. Until the 1950s, the only measure used for brand loyalty was repeated purchasing behaviour (Punniyamoorthy & Raj, 2007). Over the next decades, it was argued that loyalty is not only repeated purchase behaviour (Dick & Basu, 1994) but also includes measuring the attitudes of the consumer. So, researchers like Hallowell (1996) started measuring loyalty with respect to attitudinal and behavioural measures. To put it formally, Oliver (1999) defined loyalty as a deep commitment of the consumer to rebuy or repatronise a liked product or service, resulting in repetitive purchase behaviour along with the pressure of the competitive products or services in the market. Further, researchers argued that loyalty can be of two types. One is measured by repeat purchase behaviour and is known as behavioural loyalty. Another one is attitudinal loyalty, which includes recommending it to others and spreading positive word of mouth in respect of that brand (Chaudhuri & Holbrook, 2001).

To remain in the market and achieve a reasonable amount of market share has become the biggest challenge in the competitive world. However, attaining brand loyalty has facilitated marketers to move one step closer to achieving this goal. To measure brand loyalty, a model was developed by Punniyamoorthy & Raj (2007). The model included constructs such as perceived value, trust, customer satisfaction and commitment, and it was concluded that all of these have a significant impact on brand loyalty.

Many studies have been undertaken to study the concept of brand loyalty in the context of products and services. The study of brand loyalty in the case of tourism is still in its nascent stage. To study loyalty in the context of tourism, many tourists' destinations place importance on repeated visits (Oppermann, 2000). In recent years, the number has increased and it has led to bibliometric examinations. Bibliometric analysis aids in the summarisation of studies in order to identify the key areas of research and to support researchers in better understanding the knowledge structure of the literature (Guzeller & Celiker, 2019).

When people move from countries or places of their usual residence or profession to other places for a social, cultural or economic perspective, then this phenomenon is termed tourism. These people are often called as tourists or visitors. It has been seen that tourism contributes towards the economic development of the region concerned. The tourism sector contributes a good amount to the growth of a country's economy. It generates revenue and helps in employment generation. As per India Tourism Statistics at a Glance-2022, the number of International Tourists arriving in India has gone up by 10.6% in 2022, and the number of domestic tourists visiting to all of the states or union territories has gone up by 11%. Therefore, the present study attempts to study the literature to find out the number of publications, prominent journals and authors, etc., in this area of study.

According to Broadus (1987), bibliometrics is "the quantitative study of physical published units, bibliographic units, or surrogates for either". Bibliometrics analysis can be defined as the study of micro- and macro-communication patterns and authorships and their mathematical and statistical organisation, classification and quantitative evaluation. Bibliometrics is a methodology used to examine the development of academic fields by assessing their intellectual structure, social structure and conceptual structure (Zupic & Cater, 2015).

It examines the output of research outputs in terms of themes, methods and samples (Ye et al., 2012), and this can be achieved by applying various statistical techniques to the data collected in terms of published studies, such as books, proceedings and journals (Cobo et al., 2011; Diodato, 1994; McBurney & Novak, 2002).

The current study aims to provide answers to the following questions:

RQ1: What are the trends in publications regarding Brand Loyalty in the context of tourism with respect to time, authors, journals, countries and keywords?

RQ2: What are the various themes of research in this area?

RQ3: What are the gaps and areas of future research?

REVIEW OF LITERATURE

Brand loyalty is when a consumer is biassed towards a particular product or service. The consumer's repeated purchase behaviour demonstrates this bias. The concept of brand loyalty explained in the literature can be divided into two categories: conceptual definitions and operational definitions. Conceptual definitions explain the basic phenomenon that is being studied, and operational definitions explain the measurement methods (Mellens, 1996). The following are the definitions of brand loyalty given in the literature:

Author	Definations
Jacoby and Chestnut (1978)	“The biased, behavioural response, expressed over time, by some decision-making unit, with respect to one or more alternative brands out of a set of such brands, and is a function of psychological decision-making, evaluative processes.”
Oliver (1999)	Loyalty is defined as “a deeply held commitment to re-buy or re-patronise a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand set purchasing, despite situational influences and marketing efforts having the potential to cause switching behaviour.”
Lee & Back (2008)	Loyalty is defined as “deeply held commitment to rebuy or repatronise a preferred product or service consistently in the future, despite situational influences and marketing efforts having the potential to cause switching behaviour”

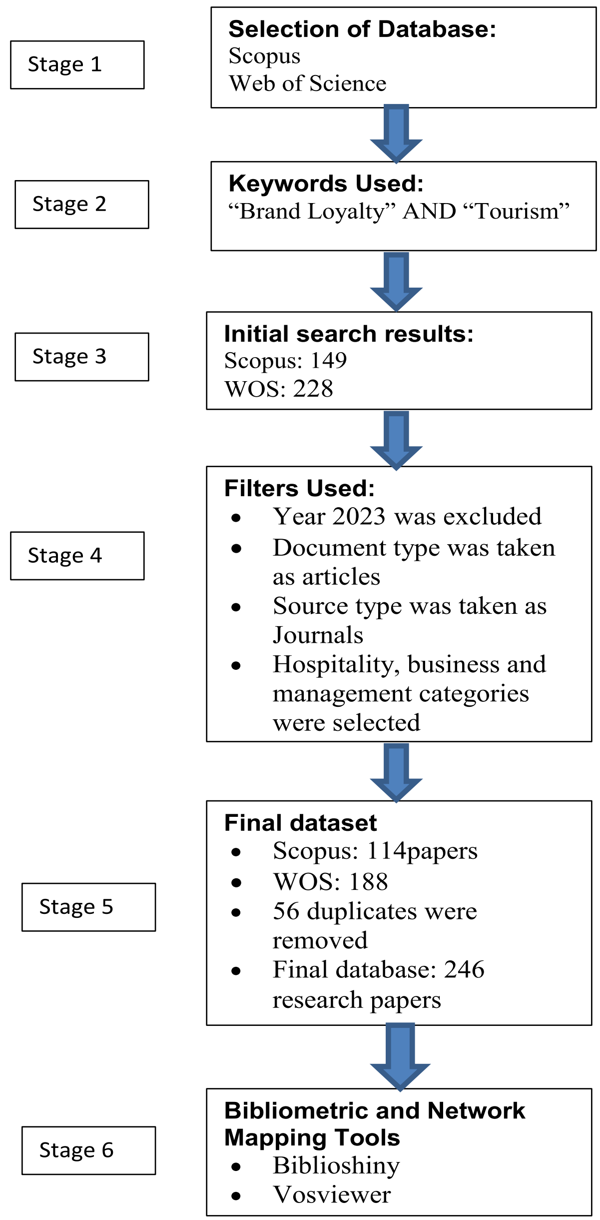
Loyalty has been studied in the literature in two aspects. One is attitudinal, and the other is behavioural. The attitudinal loyalty is set into four phases, as per Oliver (1999). These four phases are cognitive, affective, conative, and action. The cognitive phase begins with knowledge of the brand or product. The affective loyalty phase measures consumers' emotional responses towards the product or brand. The conative phase, which includes behavioural intention, is when a consumer wants to repurchase the product, and action loyalty is when there is a commitment to rebuy. Behavioural loyalty can be measured by (i) positive word-of-mouth, (ii) recommendation to others, (iii) repurchase intention, and (iv) high tolerance for price premiums (Cronin & Taylor, 1992 and Zeithaml et al., 1996). Aaker (1991) has explained the concept of brand loyalty in the form of a pyramid consisting of five layers, as shown in Figure 1. The loyalty ranges from zero to the maximum level, as it goes from bottom to top.

Figure 1: Stages of Brand Loyalty

One systematic literature review by Cengiz & Akdemir-Cengiz in 2016 considered the time period of 2005–2015. They have divided all the research in this period into three time zones, 2001–2005, 2006–2010 and 2011–2015. It is shown that the majority of the research, that is, 55%, has taken place in the time period of 2011–2015. Another systematic literature review was conducted by Górska-Warsewicz & Kulykovets in the year 2020, considering the period of 2005–2020. All of the studies taken in this review considered elements relating to hotel brand loyalty. The most common ones are perceived quality, brand awareness, brand image, and brand equity.

MATERIALS AND METHODS

The present study has used the Scopus and Web of Science databases to ensure wider coverage of quality journals. Both of these databases are known for the rigorous indexing and credibility of the research papers. Keywords used in the search process are "Brand Loyalty", and searches within the search were conducted using the term "Tourism". Initially, the results showed 149 research papers from Scopus and 228 research papers from the Web of Science. After applying filters for publication years from 1990 to 2022, source type limited to journals, document type as article and categories focussed on hospitality, business and management as categories, the final dataset comprised of 114 papers for Scopus and 188 papers for WOS. The two databases were combined using R software, and duplicates were removed. There were 56 duplicate papers in all. A final database of 246 research papers was calculated. The process of retrieving the final dataset of 246 research papers has been explained in the following figure.



Prepared by Authors

Figure 2: PRISMA showing the data retrieval

The following table gives a summary of the final database of 246 papers: time span, number of journals, documents, and their types, etc. It gives a brief overview of the data collected in terms of research papers. Out of a total 246 documents, 231 are articles, 9 are early access articles and 6 are review papers. This comprises 87 journals and books, etc. The average citation per document is shown as 43.2. On average, there are 2.08 authors per document and 2.89 co-authors per document. There are 765 keywords associated with each author and an additional 561 keywords. Nineteen research papers are single-authored and 492 are multiauthored.

Table1: Sample Statistics

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	1990:2022
Sources (Journals, Books, etc)	87
Documents	246
Average years from publication	5.98
Average citations per documents	43.2
Average citations per year per doc	5.412
References	14275
DOCUMENT TYPES	
article	231
article; early access	9
review	6
DOCUMENT CONTENTS	
Keywords Plus (ID)	561
Author's Keywords (DE)	765
AUTHORS	
Authors	511
Author Appearances	712
Authors of single-authored documents	19
Authors of multi-authored documents	492
AUTHORS COLLABORATION	
Single-authored documents	21
Documents per Author	0.481
Authors per Document	2.08
Co-Authors per Documents	2.89
Collaboration Index	2.19

RESULTS AND FINDINGS

This section shows the results in the form of charts representing year-wise publications, most relevant sources, most cited papers, most prolific authors, most prolific countries, keyword analysis and thematic analysis. We have used software like Biblioshiny and Vosviewer to analyse the data.

Year-Wise Publications

Figure 3 depicts the chronological distribution of publications from 1990 to 2022. Until 2005, there were very few papers published. However, starting from 2005, the number of published papers has steadily climbed and reached its peak in 2021. The surge in the publication growth rate of brand loyalty in the tourism sector indicates the heightened scholarly focus on this subject.

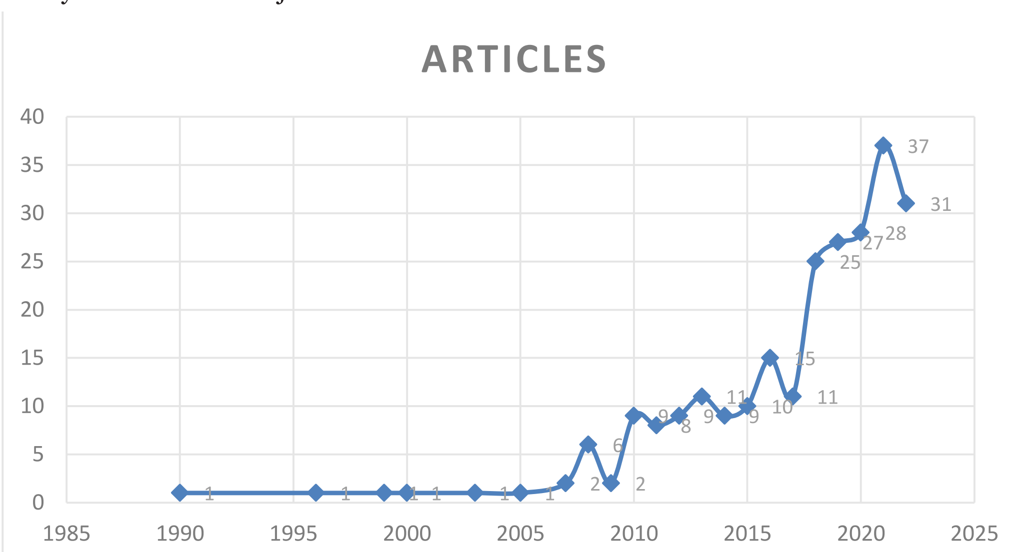


Figure 3: Yearly production

Most Relevant Sources

Table 2 shows the most relevant journals, along with the ABDC ranking and the highest number of research papers published in the area of brand loyalty regarding tourism. The Journal of Travel and Tourism Marketing, which is an A-category journal, has published the highest number of articles. The second highest research papers are published in the International Journal of Hospitality Management, which is an A* journal as per the ABDC ranking. One journal named Journal of Hospitality and Tourism Research with 12 papers is not ranked in the ABDC lists. The table shows the 11 top journals with a minimum of 7 research papers.

Table 2: Most Relevant Journals, Their Ranking and Number of Research Papers Published. NR: Not Ranked

Sources	ABDC Ranking	Articles
Journal of Travel & Tourism Marketing	A	18
International Journal of Hospitality Management	A*	15
Journal of Hospitality & Tourism Research	NR	12
International Journal of Contemporary Hospitality Management	A	11
Tourism Management	A*	11
Journal of Hospitality and Tourism Management	A	9
Journal of Travel Research	A*	9
Current Issues In Tourism	A	8
Journal of Destination Marketing & Management	A	7
Journal of Vacation Marketing	A	7
Tourism Review	B	7

Source Growth

Figure 4 shows the growth of five sources that have published papers regarding brand loyalty. These five journals shown in the figure are the top journals publishing papers in the said area, as shown in Table 2. As shown in the figure, "Journal of Travel and Tourism Marketing" published the highest number of papers, followed by "International Journal of Hospitality Management" with a maximum of 15 papers in 2002. Other journals on the list of top 5 are "Journal of Hospitality and Tourism Research", "International Journal of Contemporary Hospitality Management" and "Tourism Management".

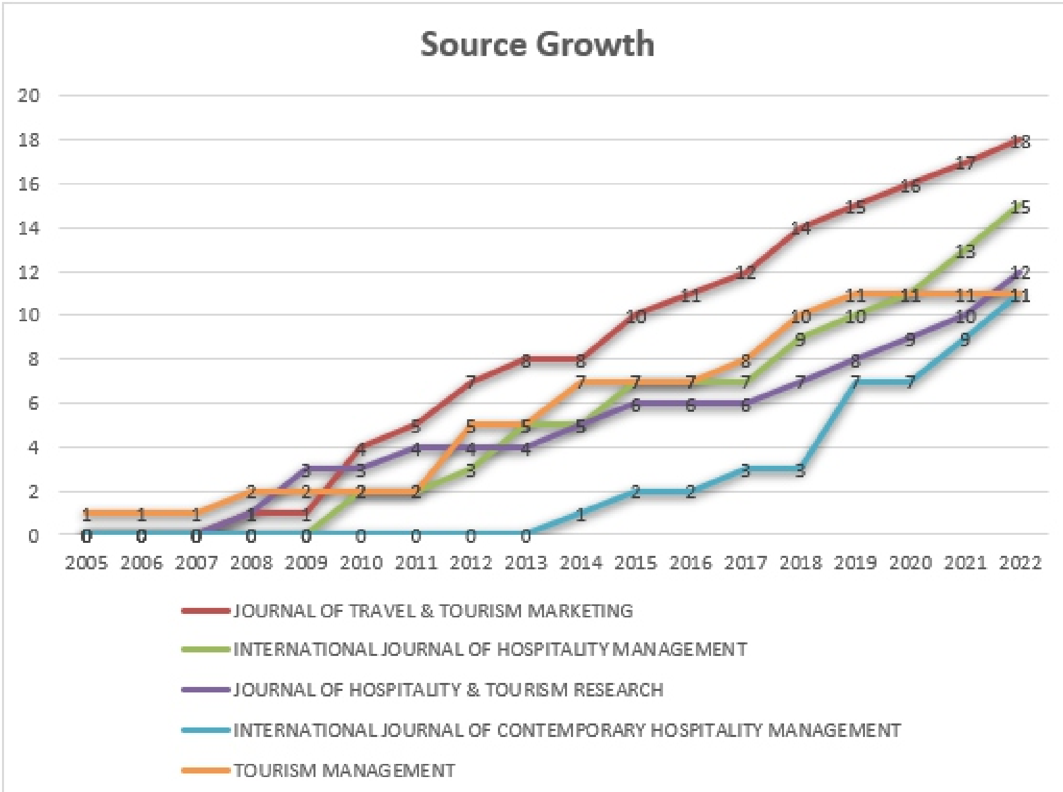


Figure 4: Brand loyalty source growth dynamics

Most Cited Papers

A citation means giving a reference to the source. Table 3 indicates the top 20 cited papers in the area of brand loyalty and tourism based on the database of Scopus and Web of Science taken together. The most cited paper is "Tourism Destination Loyalty", with 681 citations, authored by M. Oppermann in 2000. He has proposed a loyalty scale with cut-off points and has facilitated the determination of the composition of the visitors and the estimation of demand with respect to tourism destination loyalty. This paper also explored the positioning of the destination and the segmentation based on demand forecasts and estimates. The second most cited paper is "Destination image and tourist loyalty: A meta-analysis" by H Zhang, X. Fu, LA Cai and L. Lu with 532 citations. This paper investigated that the destination images have a significant impact on composite loyalty regarding destinations. This paper has studied two frameworks with respect to the destination image, namely cognitive image and affective image. The third most cited paper with 389 citations is "Brand equity, brand loyalty, and consumer satisfaction" by J Nam, Y Ekinci and G Whyatt. This paper investigated the mediating effect of consumer satisfaction on the relationship between consumer brand equity and brand loyalty regarding the hospitality industry. It has also been found that brand experience plays an important role in establishing brand loyalty. The fourth most cited paper with 381 citations is "Drivers of consumer-brand identification" by N. Stokburger-Sauer, S. Ratneshwar and S. Sen. This paper has explored drivers of consumer brand identification. In addition, there are two important consequences of brand identification: brand loyalty and brand advocacy. The fifth highest citation is "Customer engagement with tourism social media brands", with 342 citations. Researchers have validated and tested a customer engagement scale. Customer engagement with the tourism brand scale consists of four factors, namely, identification, attention, absorption and interaction. The outcome of customer engagement, as reported in the paper, is brand loyalty.

Table 3: Most Cited Papers

Author	Year	Title	Total Citations
M Oppermann	2000	Tourism destination loyalty	681
H Zhang, X Fu, LA Cai, L Lu	2014	Destination image and tourist loyalty: A meta-analysis	532
J Nam, Y Ekinci, G Whyatt	2011	Brand equity, brand loyalty and consumer satisfaction	389
N Stokburger-Sauer, S Ratneshwar, S Sen	2012	Drivers of consumer–brand identification	381
P Harrigan, U Evers, M Miles, T Daly	2017	Customer engagement with tourism social media brands	342
H Kim, WG Kim	2005	The relationship between brand equity and firms' performance in luxury hotels and chain restaurants	313
Kevin Kam Fung So, Ceridwyn King, and Beverley Sparks	2014	Customer Engagement With Tourism Brands: Scale Development and Validation	306
KKF So, C King, BA Sparks	2016	The role of customer engagement in building consumer loyalty to tourism brands	272
C Leckie, MW Nyadzayo	2016	Antecedents of consumer brand engagement and brand loyalty	211
Xiaoxia Sun, Christina Geng-Qing Chi, Honggang Xu	2013	Developing Destination Loyalty: The Case Of Hainan Island	186

Kevin Kam Fung So, Ceridwyn King, Beverley A. Sparks, Ying Wang	2013	The influence of customer brand identification on hotel brand evaluation and loyalty development	169
Jeou-Shyan Horng, Chih-Hsing Liu, Hsin-Yu Chou, Chang-Yen Tsai	2012	Understanding the impact of culinary brand equity and destination familiarity on travel intentions	167
Yuksel Ekinci, Ercan Sirakaya-Turk, Sandra Preciado	2013	Symbolic consumption of tourism destination brands	157
Jinsoo Hwang, Heesup Han	2014	Examining strategies for maximizing and utilizing brand prestige in the luxury cruise industry	153
Raouf Ahmad Rather, Linda D. Hollebeek and Jamid Ul Islam	2019	Tourism-based customer engagement: the construct, antecedents, and consequences	146
Kam Hung, James F. Petrick	2012	Testing the effects of congruity, travel constraints, and self-efficacy on travel intentions: An alternative decision-making model	144
Alexis Papathanassis, Insa Beckmann	2011	Assessing the 'poverty of cruise theory' hypothesis	140
Woo Gon Kim, Bongran Jin-Sun, and Hyun Jeong Kim	2018	Multidimensional Customer-Based Brand Equity and Its Consequences in Midpriced Hotels	140
Xiang (Robert) Li and James F. Petrick	2008	Examining the Antecedents of Brand Loyalty from an Investment Model Perspective	136
Allan Cheng Chieh Lu, Dogan Gursoy, Carol Yirong Lu	2015	Authenticity perceptions, brand equity and brand choice intention: The case of ethnic restaurants	128

Most Prolific Authors

Table 4 shows the most prolific authors with their affiliations, total citations, articles and H-Index. Heesup Han is the most prolific author, with 547 citations and 14 research papers. He is a professor at Sejong University, South Korea, and his areas of interest are consumer behaviour, sustainable tourism, hospitality marketing and destination development, etc. The second most prolific author is Jiyoung Hwang, who has published 10 research papers. She is a professor of marketing at the Bryan School of Business and Economics, University of North Carolina at Greensboro. Her areas of interest are consumer behaviour, social innovation, the sharing economy and older consumer well-being. The third author who has published nine papers is Chih-Hsing Liu from the National Kaohsiung University of Science and Technology. The fourth author who has published eight papers is Jinkyung Jenny Kim from Youngsan University, South Korea. Her areas of interest include hospitality and tourism, hotel management, service quality, tourism development, service marketing and market segmentation. The other authors who have published four or more papers are also shown in the following table.

Table 4: Most Prolific Authors

Author	Affiliations	Total Citations	Total Articles	H-Index
Heesup Han	Sejong University, South Korea	547	14	9
Jiyoung Hwang	Bryan School of Business & Economics University of North Carolina at Greensboro	351	10	8
Chih-Hsing Liu	National Kaohsiung University of Science and Technology	280	9	7
Jinkyung Jenny Kim	Youngsan University, South Korea	176	8	5
Ki-Joon Back	University of Houston	413	7	7
Hyun Jeong Kim	Washington State University	529	7	5
Ju Yup Lee	Kent State University	397	7	7
Xiang (Robert) Li	University of South Carolina	334	7	7
James F. Petrick	Texas A&M University	543	7	7
Kevin Kam Fung So	University of South Carolina, Columbia, SC, USA	803	6	5
Wansoo Kim	Florida State University	643	5	5
Ceridwyn King	Temple University	760	4	4
Ying Wang	Griffith University, Gold Coast, Queensland, Australia	471	4	4

Figure 5 shows a chart of the productivity of the top 20 authors. The line against each author's name indicates the production timeline. The size of the bubbles on the line shows the number of papers produced. The hue of the bubble corresponds to the annual citation count. The size of the bubble is directly proportional to the number of papers, while the darkness of the colour indicates the level of citations.

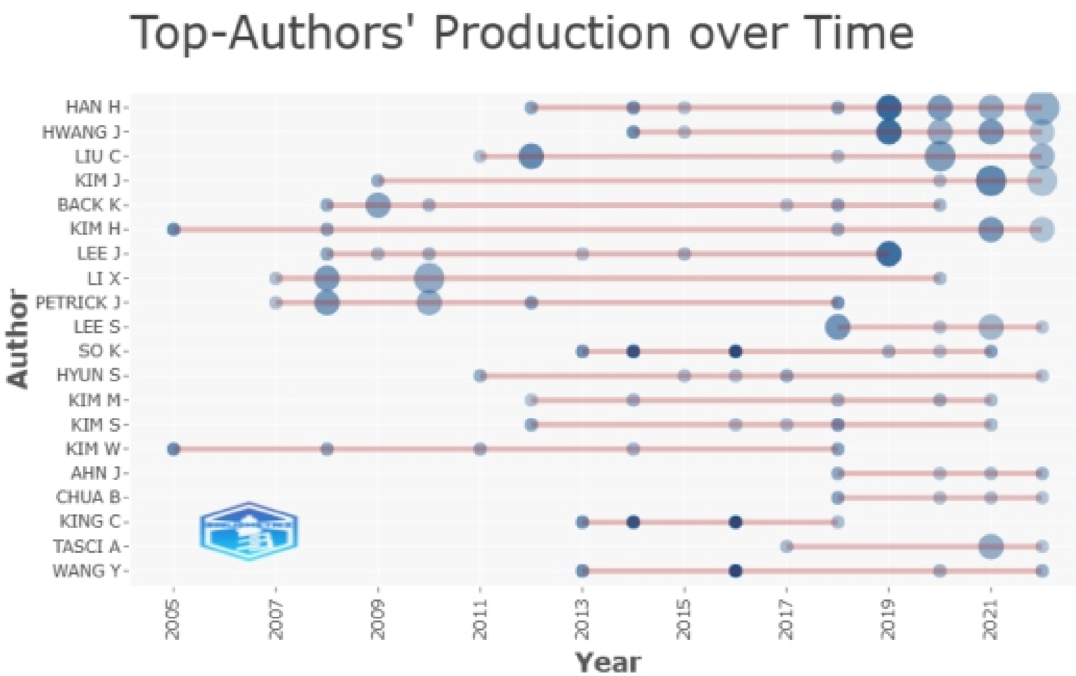


Figure 5: Authors top production over time

Figure 6 shows the history of the direct citation network among the authors with two different clusters. One cluster of co-citations spanning from 2008 to 2019 is among Li & Petrick (2008), Kang et al. (2015) and Song et al. (2019). Another cluster shown spans from 2005 until 2018, started by Kim & Kim (2005), which is one of the most influential works on how success in managing brand equity leads to firms' success in terms of performance in the hospitality industry, especially luxury hotels and chain restaurants.

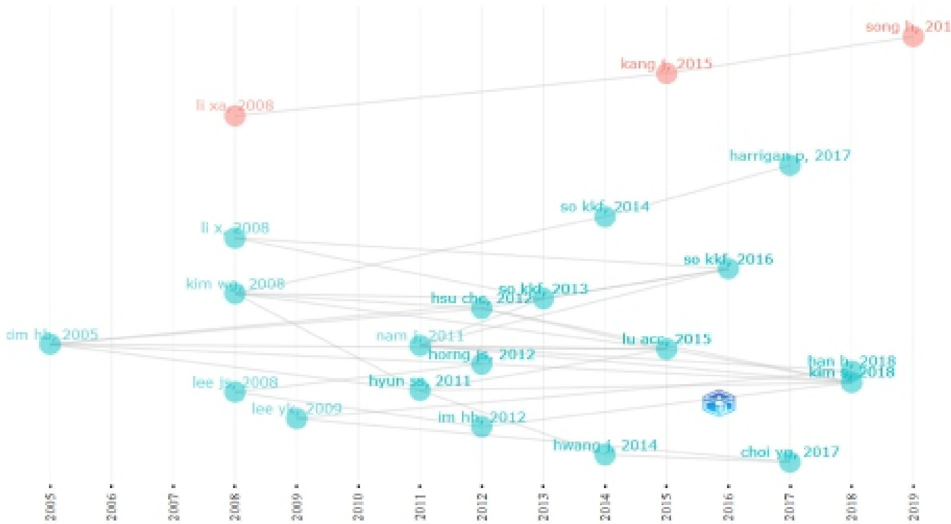


Figure 6: Historical citation network among authors

The following figure shows the collaboration network among the various authors. The various colour groups indicate the collaboration groups. The size of the circle shows the authors with the highest number of papers. For example, Han H has the largest circle, and he is the topmost author and also the most prolific author, with 14 articles having 547 citations. This is also shown in Table 4. The second largest circle is with Hwang J., who is the second most prolific author with 10 articles and 351 citations. In addition, as shown in Figure 7, the Han H collaboration group is related to the Hwang J group, which is in turn related to the Lee J. group.

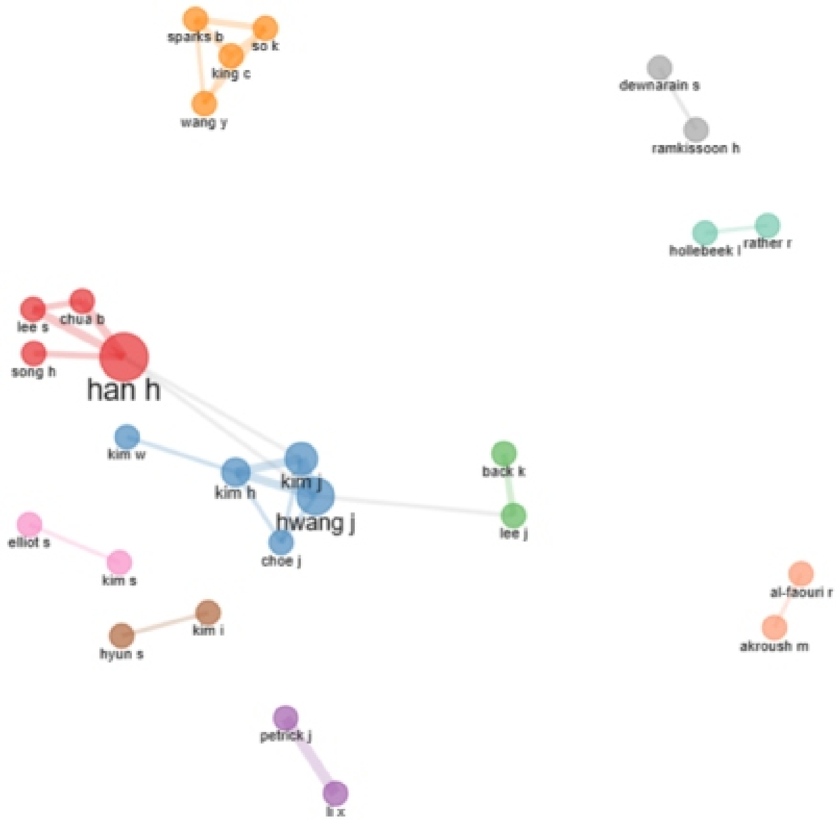


Figure 7: Collaboration Network of Authors

Most Prolific Countries

Figure 8 shows the most prolific countries based on the papers published in the area of brand loyalty regarding tourism. These papers are allocated to different countries based on the researchers' belongingness. The United States has published most of the papers, that is, 134, followed by China, which has published 100 papers, then South Korea with 73 papers and so on. A total of 42 countries have contributed to the research area, though the figure only shows those countries that have published five or more papers.

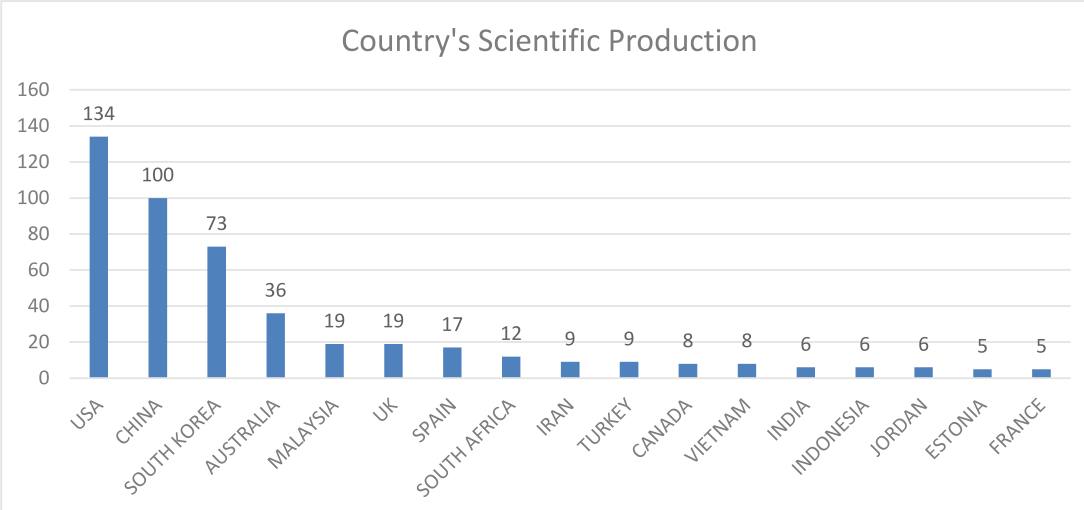


Figure 8: Countries having significant contributions

Country Collaboration

Figure 9 shows the collaboration among different countries regarding the research work on the world map. Most of the research has been conducted in developed nations. This states that research on brand loyalty with regard to tourism is still in the nascent stage. Therefore, research with foreign collaboration should be encouraged. In this area, it has been found that Australia has collaboration with countries such as Bangladesh, Finland, France, Germany, India, Indonesia and Malaysia, among others. It has maximum collaboration with Malaysia and South Africa. Similarly, China also has collaboration with six nations, and the maximum collaboration is with Australia. The USA has maximum collaboration with China and Korea.

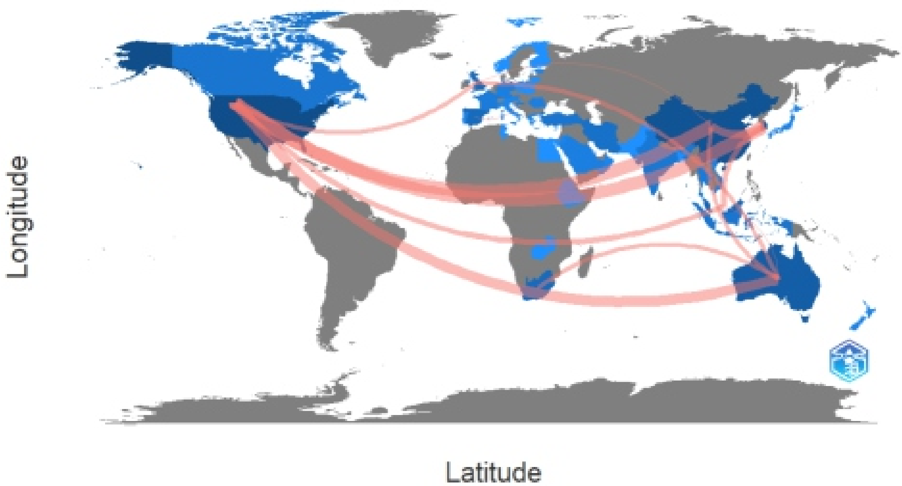


Figure 9: Countries collaboration map

Keyword Analysis

Keyword analysis shows the most frequently used keywords in the published brand loyalty research papers. Table 5 shows the list of keywords that have occurred more than twice. As can be seen from the table, brand loyalty has been used 109 times as a keyword, followed by brand equity, which has occurred 33 times. Keywords in a combination of destinations such as destination branding, destination loyalty, destination image, destination brand equity and destination marketing have also been given, but a smaller number of times. This can also be implied, as the research on brand loyalty in the case of destinations is at a very early stage and can be explored further.

Table 5: List of Keywords

S.No.	Keywords	Occurrences
1	brand loyalty	109
2	brand equity	33
3	loyalty	18
4	brand awareness	15
5	brand image	15
6	Satisfaction	15

7	tourism	13
8	customer engagement	11
9	perceived quality	11
10	perceived value	11
11	brand experience	10
12	social media	10
13	brand attachment	9
14	brand trust	9
15	service quality	9
16	trust	9
17	customer-based brand equity	8
18	destination branding	8
19	destination loyalty	8
20	brand authenticity	7
21	brand personality	7
22	brand satisfaction	7
23	customer satisfaction	7
24	destination brand loyalty	7
25	brand love	6
26	corporate social responsibility	6
27	hospitality	6
28	brand association	5
29	brand prestige	5
30	branding	5
31	self-congruity	5
32	tourist satisfaction	5

33	well-being perception	5
34	attitude	4
35	attitudinal loyalty	4
36	authenticity	4
37	brand	4
38	brand identification	4
39	co-creation	4
40	customer experience	4
41	customer loyalty	4
42	destination brand equity	4
43	destination image	4
44	hotel industry	4
45	image	4
46	sustainability	4
47	value	4
48	attitudinal brand loyalty	3
49	Australia	3
50	behavioural loyalty	3
51	brand affect	3
52	brand associations	3
53	brand attitude	3
54	consumer value	3
55	consumer-based brand equity	3
56	destination	3
57	destination marketing	3
58	double jeopardy	3
59	lovemarks	3

60	loyalty program	3
61	marketing	3
62	place attachment	3
63	purchase intention	3
64	sem	3
65	sharing economy	3
66	structural equation model	3

Table 6: Clusters of Keywords

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6
Corporate social responsibility	Brand Equity	Brand Attachment	Brand Association	Customer Engagement	Brand Love
Customer based brand Equity	Brand Personality	Brand Authenticity	Brand Awareness	Hospitality	
Destination Branding	Branding	Brand Experience	Brand Image	Social Media	
Destination Loyalty	Customer Satisfaction	Brand Loyalty	Brand trust	Tourism	
Loyalty	Destination Brand Loyalty	Brand Prestige	Perceived Quality		
Perceived Value	Self-Congruity	Brand Satisfaction			
Satisfaction	Service Quality	Well Being Perception			
Trust	Tourist Satisfaction				

Figure 10 shows the keyword map prepared with the help of the Vosviewer. The distance between the keywords shows the strength of the relationship. The shorter the distance, the stronger the relationship. Of 766 authors' keywords, 34 appeared to be more than 5 times, and out of 34, 33 related to each other, as shown in the following figure. There are six clusters formed, as shown in Table 6. Cluster 1 has keywords such as corporate social responsibility, customer-based brand equity, destination branding, destination loyalty, loyalty, perceived value, satisfaction and trust. Cluster 2 has brand equity, brand personality, customer satisfaction, branding, destination brand loyalty, self-congruity, service quality and tourist satisfaction. As we move on to the next clusters, the number of elements in each cluster decreases.

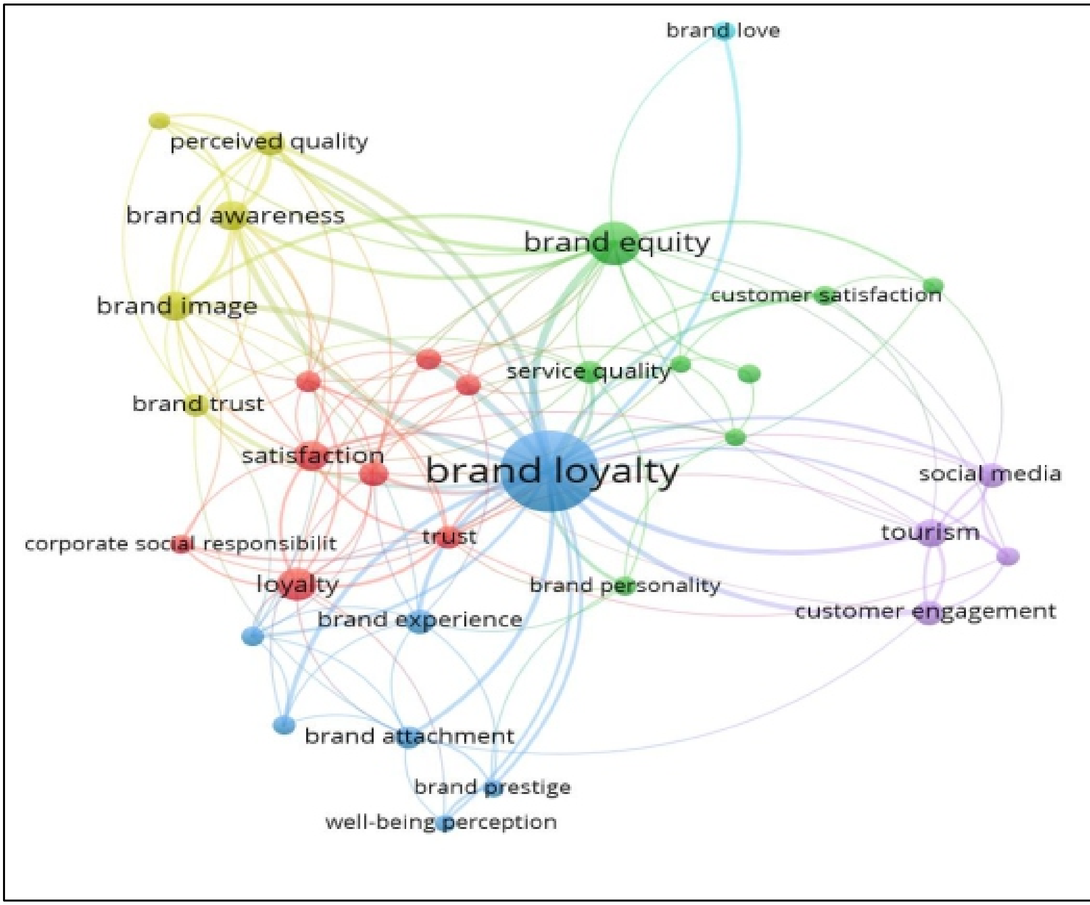


Figure 10: Keyword Analysis

Three Field-Plot Analyses

Figure 11 illustrates a three-dimensional graph showing the relationship between nations, authors and themes in research on brand loyalty in the tourism industry. One must consider the vertical dimension and width of the lines that connect the boxes. The height of the box directly correlates with its significance, while the strength of the correlations between the lines directly corresponds to the amount of labour generated. The first column displays the country, the second column indicates the author's name and the third column reflects the keywords utilised by the authors. The writers refer to the keywords as the themes in this study. Based on the dimensions of the box and the width of the lines, it is evident that Korea, the USA, and China are the leading producers of a significant quantity of paper. Furthermore, the term “brand loyalty” is frequently utilised in this domain. The thickness of the lines linking the countries and authors indicates that Han H, Hwang J. and Kim J are the prominent contributors from Korea.

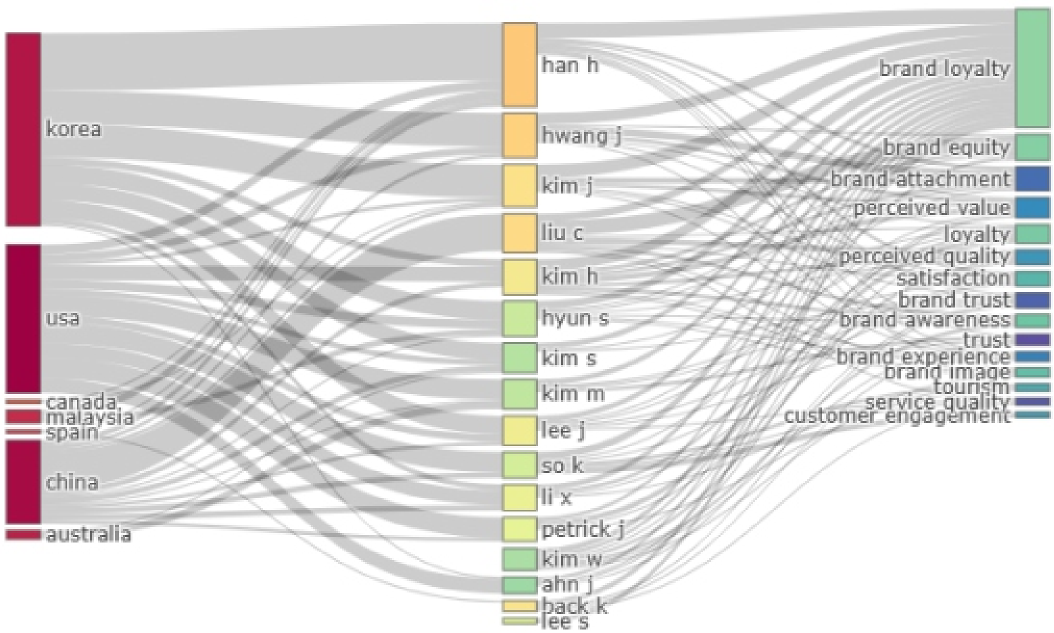


Figure 11: Three field plots

Multiple correspondence analysis is also utilised to do factorial analysis on the authors’ keywords. MCA is an exploratory multivariate technique used for the graphical and numerical analyses of multivariate categorical data. It analyses the connections between a set of categorical categories in order to discover previously unknown latent variables or factors. The interpretation of the data relies on the distribution of the points and their relative positions along the dimensions. The proximity of a word indicates a higher similarity in its distribution, as depicted in Figure 12. The authors’ analysis reveals that brand associations, perceived quality, brand awareness, brand image, hotel sector, purchase intention, brand equity, customer value and authenticity are grouped together as a distinct cluster.

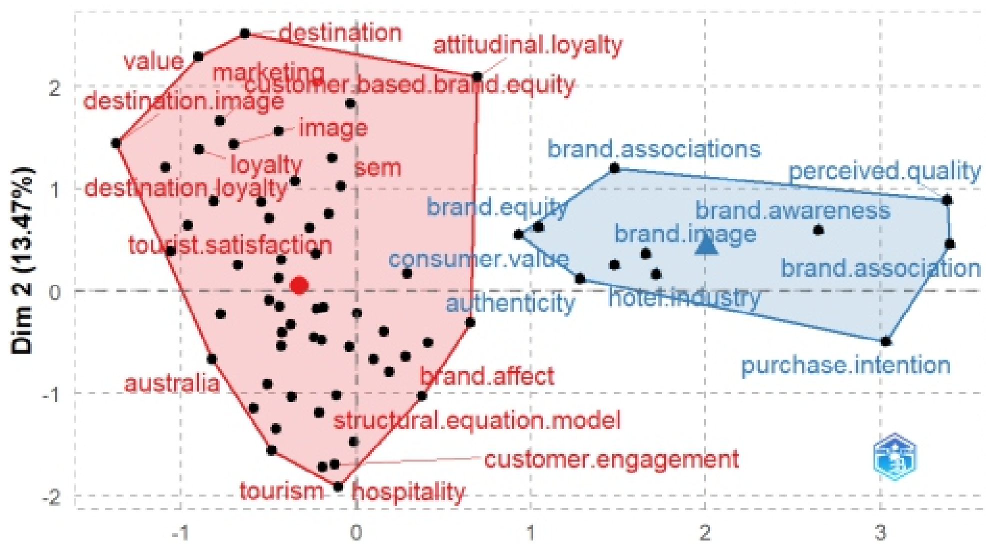


Figure 12: Factorial Analysis

Thematic Analysis

Thematic analysis is done to take insights from previous studies and show future insights into the topic. This provides a roadmap for the researchers regarding what can be done in the research area in the future. Thematic analysis generates themes from groups of an author's keywords and their connections. These themes are defined by characteristics such as density and centrality. The horizontal axis represents centrality, whereas the vertical axis represents density. Esfahani et al. (2019) assert that density assesses the cohesiveness of node connections while centrality gauges the degree of association among various themes. These two characteristics evaluate the topic's importance and degree of development. A node's centrality and relevance increase along with the number of relationships it has with other nodes in the theme network, placing it in a vital position. Similar to this, a research field's ability to grow and sustain itself is defined by the cohesion of the nodes that make up its density.

The quadrant in the upper right (Q1) signifies dominant themes, while the quadrant in the bottom right (Q4) signifies fundamental themes. The quadrant in the upper left (Q2) indicates highly specialised themes, while the quadrant in the lower left (Q3) represents emerging or declining themes. Figure 13 depicts Q1 themes such as brand loyalty, brand experience and brand attachment. Themes shown in Q2 have marginally contributed to the area and are very little connected with the main theme; however, these are potential areas to be explored. These themes are specialised themes but need to be developed more with regard to brand loyalty. It can be seen that themes such as brand equity, brand awareness and brand image, customer engagement, social media and tourism are sandwiched between Q1 and Q4, which means that these are well-developed and are leading themes in this area. Themes shown in Q4, such as loyalty, satisfaction, perceived value, destination branding and destination loyalty, are important as they can lay the foundation for field development. Q3 shows emerging or disappearing themes such as destination brand loyalty, brand identification, dead sea destination and cognitive appraisal theory.

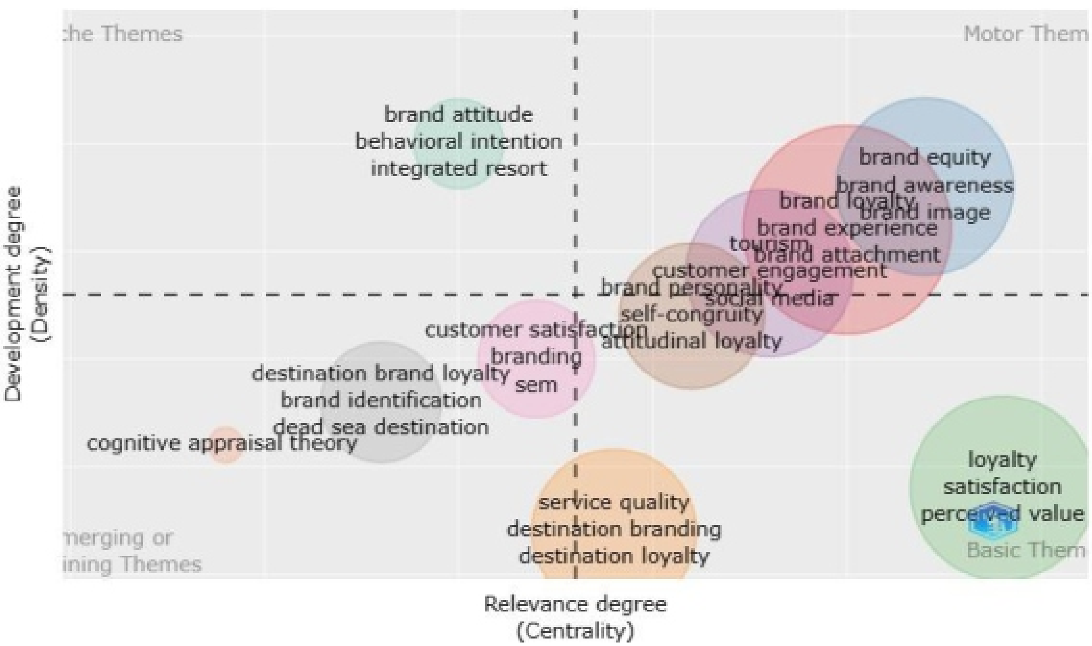


Figure 13: Three field plot

DISCUSSION

Studies on brand loyalty typically take a behavioural and/or attitudinal approach. The behavioural approach conceptualises brand loyalty as a behaviour. A consumer may only be considered loyal if they consistently purchase from the same brand over an extended period of time (Ehrenberg et al., 1990). Back & Parks (2003) provide the attitudinal approach to loyalty, which defines brand loyalty as an attitude and assesses it by examining customer ideas and opinions. Researchers in this subject adopt a deterministic approach, where a limited number of attitudinal elements have a direct impact on repeat purchases (Rundle-thiele, 2005).

This school of thought posits that the separation and stimulation of these reasons can lead to desired consumer behaviour. According to Bloemer et al. (1998), the behavioural approach has been criticised for its lack of conceptual grounding and limited understanding of the dynamic and complex nature of consumer behaviour. The studies on brand loyalty in the context of tourism show that the various elements of the brand, such as satisfaction, awareness, equity, identification, and self-congruity, etc., have been studied in the case of destinations, as shown in Figure 14. Tourism is a dynamic product, as it involves a combination of various products and services that a tourist engages with throughout their journey and stay.

The bibliometric analysis is conducted in order to examine the research done in the literature on the basis of the quality, dimensions and functionality of the different concepts given and to provide support in measuring the productivity of the field's development process (Moed et al., 2002). The findings of these studies aid in evaluating the performance of subcategories in the research domain, changing science policies in terms of budget allocations and comparing the scientific input and output (Gu, 2004). The results of bibliometric studies also help in studying the interrelationships of various disciplines and pave the way for interdisciplinary research (Van Leeuwen and Tijssen, 2000).

The present view has given a detailed study of the types of research papers published in the area of brand loyalty in tourism. The descriptive analysis given in Table 1 and the year-wise publication chart have shown that the majority of the research was done after 2005. However, if this is compared with brand loyalty in the case of products and services, the research done with respect to tourism is very limited.

Further, in terms of the types of variables studied in the literature, the authors have found that more emphasis has been laid on the service quality aspects in the case of destinations and hotels. Few studies have focussed on the domain of festivals and events. Therefore, the area of study should be undertaken from a festival and event point of view. The motivational factors that bring visitors to the destinations and places should be studied so that more efforts can be put in by the destinations to attract more visitors.

Further, considering the country-wise production, it can be seen from Figure 7 that countries such as the USA, China and South Korea are the major hubs of research in this area. Many countries such as India, France, Spain and Canada, which have a developing and promising tourism sector, are lacking in academic attention.

The analysis of the most prolific journals and authors gives future researchers an idea regarding possible avenues for further research. Research becomes more meaningful if authors from different cultures and backgrounds collaborate with each other. The present study gives a fair idea of the research interests of different authors in this field of tourism so that they can be approached for collaboration.

Thematic analysis shows that themes such as destination branding and destination loyalty are sandwiched between the basic theme and the emerging/declining theme. We further advise the researchers to delve into these areas of destination branding and destination loyalty.

LIMITATIONS AND SCOPE FOR FUTURE RESEARCH

The present study is not free from limitations. First, the base of the present study is Scopus and Web of Science. Research can be undertaken by taking into consideration databases such as Google Scholar. Second, the current study primarily focusses on bibliometric analysis. Future research can also explore meta-analysis and systematic literature reviews, considering methodologies and theories of branding in this area. Third, the scope of the database can be increased by including more keywords such as brand identification and brand personality, etc., in the case of tourism. Fourth, the present study has considered an umbrella term of tourism, though further microunits such as hospitality, hotels, destinations and events can also be explored while browsing the Scopus-like databases. Finally, the majority of studies have been done in developed nations like the United States, which gives an opportunity to future researchers to explore emerging economies as well. The authors have tried to give a comprehensive picture of all of the research taken in the area of brand loyalty. Future researchers can take up different techniques, such as clustering.

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