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Innovation Energy as a Stimulus for Converting Employees' Innovation Properties into IWB, Yielding Result Drive, Flow and Stamina

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Abstract

The article centres on a study, extending from two preceding case studies, with a specific focus on exploring the converting role of innovation energy in the realm of innovative work behaviour (IWB). The findings underscore the pivotal role of innovation energy in converting the individual innovation properties—creativity, psychological empowerment and optimism—into IWB. It also underscores the significance of organisational attention to these individual properties, along with four additional working mechanisms—autonomy in work design, innovative teamwork, supportive leadership and external contacts—all of which impact the converting process. Insights gleaned from this case study show that innovation energy plays a crucial role in the overall IWB process. Through a careful examination of the interplay between the construct of innovation energy and five associated mechanisms, the article offers an understanding of the IWB process as observed through the lens of engaged employees actively demonstrating IWB.

Keywords

innovation energy – case study – engagement – innovation properties – abductive research – innovative work behaviour

1 Introduction[1]

There is an evolving comprehension within human resources management (HRM) and business administration science that although management can foster innovation, the origin of novel ideas often stems from individual employees (Mumford 2000; Tang 1998; Nijhof, Krabbendam & Looise 2002; Bos-Nehles, Bondarouk & Neijenhuis 2017; Bos-Nehles, Renkema & Janssen 2017). Employees, with their diverse backgrounds, experiences and roles, engage in a sociopolitical organisational process where they must develop, carry, react to and modify ideas (Van De Ven 1986). Numerous factors hinder the initiation of innovation, even when its organisational necessity is substantial and evident.

Organisations, managers, employees and teams often seek stability in sociopolitical processes, demonstrating a resistance to innovation, thereby contributing to a high failure rate of innovations (Van De Ven 1986; De Man & Tours 2016). Institutions are characterised by ingrained patterns, rules, customs, norms, values and processes, which render them highly institutionalised (Vermeulen 2011; Van Hootegem 1999).

Despite the fact that the imperative role of innovation in creating and maintaining competitiveness has been demonstrated in several industrial revolutions, the pace of change processes remains gradual. The literature on innovative work behaviour (IWB) frequently depicts innovation as a consequence of deliberate managerial decisions within an organisation. While this portrayal is largely accurate, it is essential to acknowledge that IWB also emanates from the empowered, creative and optimistic drive of employees exhibiting this behaviour (Amabile 1988, 1998; Spreitzer 1995, 2008; Li & Wu 2011; Hsu, Hou & Fan 2011). In our earlier publications, we posited that these individual innovation properties endow innovation energy and are at the same time influenced by this energy. Those publications also emphasised that innovation energy is mutually related with work contextual factors, including supportive (transformational) leadership, external contacts such as co-creation, innovative teamwork and perceived room for autonomy in decision-making (Van Essen, De Leede & Bondarouk 2022).

A literature review conducted by Schippers and Hogenes (2011, 193) outlined a research agenda on energy management, concluding that 'although energy is a concept implied in many motivational theories, it is hardly ever explicitly mentioned or researched'. In our exploration of human energy at work,

1 The case studies in this article were supervised by the University of Twente, Enschede, the Netherlands. Further research in this area can be found at https://research.utwente.nl/en/persons/henk-jan-van-essen.

we established that innovation energy converts employees' innovation properties into IWB within a mutually dependent relationship with the work context. Our comprehensive research comprised three case studies in Dutch domestic and internationally operating organisations, where we conducted interviews with employees demonstrating IWB and their respective managers. The Netherlands, being a representative country for innovation research, is ranked in the top five most innovative places globally in the Global Innovation Index 2022, a reputable index compiled by the World Intellectual Property Organization (Dutta et al. 2022).

This ranking underscores the country's significance as an ideal setting for investigating IWB of employees, despite the commonly perceived slow pace of innovation processes. The case studies were conducted at three organisations: Philips Research, Topicus, an IT company, and Saxion University of Applied Sciences. The research spanned 7.5 years, from 2016 to 2024. Philips and Topicus were selected as profit-oriented organisations known for their innovative culture. In contrast, Saxion is a non-profit educational institution where innovation is not commonly practised among many lecturers. Despite this, the institution is currently undergoing a radical educational innovation aligning with its strategic direction. Lecturers engaged in shaping and implementing educational curricula based on the new educational vision encounter challenges such as navigating through numerous regulations and facing resistance from their peers.

We assumed that lecturers who willingly project leadership roles in spearheading this transformation, alongside their regular teaching duties, were likely exhibiting IWB, which turned out to be the case. This instructional shift is deemed radical, challenging lecturers accustomed to traditional classroom approaches and pushing them beyond their comfort zones. The new vision prioritises students taking substantial personal responsibility for their professional development. Rather than relying on brief assessments of partial knowledge, students are expected to transparently showcase their responsibility through personally curated digital portfolios. The research question for this third case study was: 'In what manner does innovation energy serve as a catalyst for IWB, influenced by individual characteristics, autonomy in work design, teamwork, leadership and external working mechanisms, within the context of a radical innovation process?' In this article, we summarise the results of the first two case studies and focus on this third case study at Saxion.

2 Method

Adhering to the abductive systematic combining method (Dubois & Gadde 2002, 2014), the sensitising theoretical framework of our research underwent adjustments grounded in the outcomes of the case studies. This led to the development of an 'Innovation Energy and IWB model,' where the theoretically established variables were augmented with new factors identified through inductive coding. At this stage, quantitative research is not deemed feasible, as further exploration is imperative to construct a comprehensive theory around the novel concept of innovation energy (Boeije 2014).

Our principal objective was to enrich the IWB literature by formulating a theoretical framework for the innovation energy construct, thereby providing more clarity on its role in the overall IWB process. For the choice of method, we were inspired by the work of Saetre and Van De Ven (2021), who argued that theorising through abductive reasoning is not a single flash of inspiration, but rather a valuable systematic method to understand complex phenomena through observing and confirming an anomaly. Our three case studies incorporated individual interviews with 26 managers and with 70 employees. In the Saxon case, with 17 employees in 5 focus groups across diverse departments. In addition to the focus groups, we conducted individual interviews with 21 innovative lecturers and their 5 team leaders at Saxion. The respondents exhibited variations in gender, career experience and age.

The interviews, lasting approximately 45 minutes to an hour each, persisted until data saturation was attained, determining the total number of respondents. The Atlas.ti program was employed for axial and open coding of the transcripts, with the analyse function facilitating the selective coding process to derive the results reported in this article.

A data management plan for the Philips Research, Topicus and Saxion studies was meticulously developed and received approval from the privacy officers representing these case study organisations, as well as from the University of Twente, prior to data collection. Participation in the research was entirely voluntary, and all interviewees provided signed informed consent.

3 Results

3.1 *Result of Case Studies One and Two: The Model*

The outcomes from case studies one and two disclosed that employees demonstrating IWB possessed the requisite innovation properties, including creativity, psychological empowerment and optimism. Innovation energy emerged

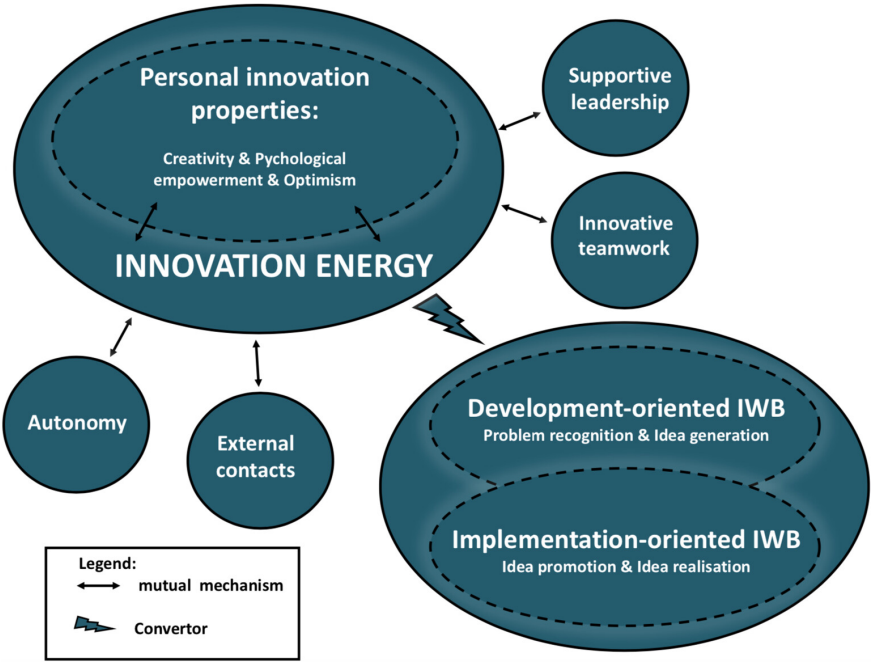

FIGURE 1 Innovation energy and IWB model
VAN ESSEN, DE LEEDE, & BONDAROUK (2022)

as a crucial element in facilitating the generation of new ideas and persevering through challenges until an invention evolves into a recognised innovation.

Our data interpretation suggests that this energy plays a role in converting these properties into IWB in a mutual interplay with five working mechanisms: (1) the individual mechanism, wherein the person discovers the energy within themselves leading towards IWB, with or without other factors; (2) the work design autonomy mechanism, where individual energy shapes and is shaped by tasks with varying levels of perceived autonomy; (3) the team mechanism, where the individual's energy influences collective team behaviours and vice versa; (4) the leadership mechanism, where innovation energy affects and is affected by leadership; and (5) the external mechanism, where the individual's energy influences external stakeholders and vice versa (Van Essen, De Leede & Bondarouk 2022; Van Essen & De Leede 2023). This outcome is visualised in the model in Figure 1.

3.2 *Result of Case Study Three: Insight in the Stimulus Function of Innovation Energy*

The outcomes and model of the five mechanisms served as the foundation for the third case study at Saxion University of Applied Sciences. Saxion was selected for this case study due to the presence of radical innovative circumstances within the organisation. In this article, we present new data that provides additional insights into the stimulus function of innovation energy. The interviews followed a structured approach guided by the five working mechanisms. Initially, we ascertained whether the innovators required innovation energy for their IWB and explored the interplay of this mutually influential system with the five working mechanisms in the specific context of this new case situation.

Subsequently, if the employee confirmed the necessity of innovation energy for their IWB, the following questions were posed: 'Can you tell me what this energy enables you to innovate?' 'Can you describe the internal processes or experiences within yourself that occur as a result of this energy?'

The responses were initially coded with a single code: 'explanation innovation energy' as a first-order, general, formulated initial code. Subsequently, the coded quotes were organised in a list and subjected to a second-order coding process using axial thematic codes.

In general, several innovators expressed that the innovation energy they possess is intrinsic, almost constitutional, and something they have had since birth. It is a personal attribute that they value highly, serving as a stimulant for leading an active life both at work and at home. They are enthusiastic about utilising their abundant energy for driving change processes, as one respondent formulated:

> Having energy to change things is the most fundamental. It's inside me and has to do with making connections. It's an engine and my strength. The essence of my existence is a kind of electric tingling. It is partly steerable and influenceable, but partly elusive.

What follows is the presentation of the second-order themes along with noteworthy quotes from innovators that elucidate their descriptions of the invigorating effects of innovation energy. These themes have been second-order coded as result drive, flow and stamina. The numbers behind every quote in the following presentation of the results are used for an anonymous presentation. For example, 3–1 means respondent 1 working on department 3.

3.2.1 Result Drive

In utilising their innovation energy to ensure the success of innovation, the innovators leveraged the individual mechanism as a crucial factor. They harnessed their creativity, empowerment and optimism-driven energy as a driving force to motivate the four work context mechanisms, steering them in the right direction. This strategic use is imperative because the context working mechanisms may not always be present or may exhibit lower energetic power. The innovators demonstrated their proactive engagement in influencing the entire innovation process to achieve the set innovation goals. A significant majority of innovators highlighted their active role in shaping the composition of project teams, aiming to include members with innovation properties and high energy levels:

> I gather people around me with a drive, people who just run a lesson and leave it at that, I can't do anything with that, huh. Creative development-oriented people, that's what I need.
>
> 3–1

> I consult a little less with those guys who cost me energy. I am really looking for guests who can give me energy. You can compare me a bit with the elephant in the China shop. I am implementation-oriented, and I innovate. Before and during the process, not everyone likes that. I think I give them all energy and I solve a lot for the negative ones.
>
> 1–1

3.2.2 Flow

Innovators who elucidated the significance of innovation energy mentioned that it provides a sense of flow. They perceive a smoother flow in their actions, particularly when collaborating with their project team, indicating that things are heading in the right direction. Additionally, witnessing positive responses from students towards the new educational programmes also generates this flow sensation. This, in turn, contributes to a growing sense of energy, enabling them to make significant leaps in progress:

> Energy is about the extent to which you are in a flow. Compare it to a river that should not contain too many dams and large boulders. And not too much pollution, but that there is a good current in it. That is the energy in that whereby the river actually goes to, where it will end up, that's how I feel it in my own body as a person.
>
> 1–2

Innovators expressed that the flow derived from innovation energy heightened their alertness, enabling them to discern the underlying problems that need resolution. This aspect is closely tied to the personal property of creativity. Innovation energy enhances their clarity of vision, allowing them to quickly identify optimal solutions in the situations they encounter. This clarity applies not only to the innovation itself but also to finding solutions related to securing time, financial resources or garnering support for their plans during the promotional phase of their IWB:

> I think that innovation energy mainly results in making you feel like doing something useful. This gives you more room in your head to focus on coming up with ideas. Then, more ideas arise. And if you feel more like working it out. If there is no energy, then you can't come up with ideas. Then it's a bit more of a struggle to squeeze them out.
>
> 5–2

Innovators emphasised that the flow derived from innovation energy boosts their creativity:

> And what also gives me a positive flow of energy is having conversations where we look for solutions for those autos or the box solutions, so brainstorming with each other, then there is also a kind of power. The feeling that you can take on the entire world. A kind of boost of creativity. Well, energy and creativity. They reinforce each other.
>
> 1–3

The flow generated by innovation energy imbues employees with a sense of joy, leading them to derive enjoyment from their work. This heightened sense of happiness subsequently translates into increased enthusiasm, motivating them to tackle innovative tasks with vigour and passion:

> When I look in my calendar, I see different appointments. And, if that includes agreements that have to do with innovation, for example. Then that gives me energy. And that is not the case with appointments I look forward to less. And that is because of the role I play and the freedom I have been given. I look forward to that and it gives me energy. Then you notice that you enjoy going to work.
>
> 3–4

3.2.3 Stamina

Some innovators highlighted the necessity of establishing a strong boundary between work and leisure time, although some other innovators expressed no reservations about dedicating their free time to working on innovations. The stamina provided by innovation energy enables them to maintain their innovation engagement. They find solutions for problems, experience an enhanced boost of creativity and are driven to continue working beyond the conventional confines of the workday or workweek:

> My energy to innovate means that I just feel like going to work and I don't mind being here by 7.30 am and going home at 5.30 PM and if weekend work is needed, I then take it up a notch from my drive. If you do your work with passion, you can work harder and longer.
>
> 1–6

> The need for something to change really comes from within yourself; you could call that change energy. You feel that something needs to be done and want to commit to it. And if I am completely in this energy indeed, then it may very well be that I continue there much more in the evenings or during the weekend, just say hey, so that you do feel the need to just get into it to want to deepen as well.
>
> 5–3

4 Discussion

Human energy is 'the power and ability to be physically and mentally active' (Cambridge Dictionary 2020). Within the process of IWB, it is described as a cognitive, emotional and physical state (Schiuma, Mason, & Kennerley 2007). This state provides energetic activation; the employee 'experiences feelings of vitality, vigour, or enthusiasm' (Quinn, Spreitzer, & Lam 2012, 342).

The following explanation provided by Schiuma, Mason, and Kennerley (2007, 71). has similarities with some of our second-order axial coded themes: result drive, flow and stamina. Paraphrasing Lounsbury, they offered a conceptualisation of individual energy that closely resembles the outcomes of our research, especially in how we view the stimulating role of innovation energy The primary difference lies in the fact that employees with IWB like to use their energy for innovation. In their conceptualisation, they state: 'individual energy can be conceptualised as being functionally similar, i.e., as the strength (stamina), vitality (stamina), power (flow) and capacity (result drive) to per-

form tasks (result drive) and drive (flow) towards execution of activities (result drive)' The subsequent theoretical explanation elucidates the described stimuli of innovation energy.

4.1 *Result Drive*

Due to the destabilising complexity inherent in innovation processes, we perceive employees with innovation energy as the 'spider in the web', directing the innovation energy towards successfully achieving the innovation goals by harnessing the force of the energetic mechanisms. This directing role of employees with IWB and innovation energy led us to be intrigued by the cybernetic construct, which has been developed to gain a deeper understanding of the stabilisation of both technical and human systems. Heylighen and Joslyn (2001, 160) contended that 'Cybernetics is a field of study, which has unveiled insights that can aid in comprehending fundamental phenomena such as self-organisation, goal-directedness, identity, and life.' Wiener (1962) posited that various technical and biological processes in nature inherently seek stability. Following the introduction of this cybernetic construct, scientists across disciplines have utilised it to develop stabilising systems in technical research and increasingly to elucidate the functioning of stabilised human interaction systems in social science.

Wiener's book spurred a growing interest in cybernetics among medical and psychological science communities. In its initial stages, the application of cybernetics in social science was strongly influenced by a technical perspective grounded in concepts of input, output and feedback. Wiener voiced criticism for applying cybernetics to social science, as the observer in social relations is an integral part of and influences the system, introducing potential issues of subjective perception and feedback. Unlike in cybernetic technical systems, where technicians strive to minimise coupling between the observed object and the observer, Wiener acknowledged that in social systems, such minimisation is challenging, making it difficult to conduct reliable research. As Wiener (1962, 164) stated, 'In social science, we have to deal with short statistical runs, nor can we be sure that a considerable part of what we observe is not an artefact of our own creation.'

Bateson and Maed shared a perspective similar to Wiener's regarding the involvement of the observer in the process, and they addressed this challenge by incorporating the observer into the system of input, throughput and output (Kline 2020). They introduced a second feedback loop involving the observer, laying the foundation for what is now known as second-order cybernetics. Bateson intuitively hypothesised this second-order process, stating: 'The individual mind is immanent but not only in the body. It is immanent also in pathways and messages outside the body' (cited in Kline 2020, 26).

In our study, innovation energy assumes a crucial role 'outside the body', influencing and interacting with five mutually dependent working mechanisms, ultimately resulting in IWB. In 1974, von Foerster introduced the concept of second-order cybernetics to the American Society for Cybernetics, defining it as follows:

> First-Order Cybernetics developed the epistemology for comprehending and simulating (such) biological processes as, e.g., homeostasis, habituation, adaptation, and first-order regulatory processes. Second-Order Cybernetics provides a conceptual framework with sufficient richness to successfully attack such second-order processes as, e.g., cognition, sociocultural interactions.
>
> Cited in KLINE 2020, 23

Despite encountering numerous challenges, including resistance from colleagues and the inherent risk of innovation failures, employees with IWB play a pivotal role within the system comprised of five working mechanisms. They are capable of both providing and receiving energy from these mechanisms, exerting influence on them through their innovation energy, ultimately resulting in IWB. In this manner, innovators' innovation energy transforms their personal innovation properties through the individual mechanism, influencing and utilising the other four work context mechanisms. This entire process aligns with the principles of second-order cybernetics as delineated by Heylighen and Joslyn (2001).

Schippers and Hogenes (2011) identified three characteristics of energy: amount, stability and direction. An individual might possess high mental energy yet exhibit low stability and direction, resulting in a period of task focus without clear direction or impactful results. In the context of employees with innovation energy, they demonstrate high task motivation to achieve innovation goals. As integral components of the system, these individuals engage in a second-order cybernetic process, utilising their substantial energy and that of their stakeholders to establish stability in the right direction.

4.2 *Flow*

Innovators express experiencing a sense of flow when they feel the power to address a problem or work on a solution. Schippers and Hogenes (2011, 194) describe flow as 'a source of mental energy, in that it focuses attention and motivates action', which can be interpreted as having an energetic connotation. Flow is further defined as 'the way people describe their state of mind when consciousness is harmoniously ordered, and they want to pursue what-

ever they are doing for its own sake'. In the state of flow, innovators may experience a moment of insight, often related to their innovation property of creativity. This insight can occur even in the middle of the night and is referred to as an 'Aha erlebnis'—an 'aha' experience in other words. Such moments are akin to serendipity, where an observation leads to a spontaneous new idea in a different field (Strien 2011). For instance, the classic example is the moment Archimedes stepped out of his bath, exclaimed 'Eureka' and formulated his physics law regarding the upward force experienced by a body in a liquid or gas. It exemplifies how innovations in one field often derive from translations of concepts existing in another field (Van De Ven 1986).

4.3 *Stamina*

Innovators emphasised that innovation energy provided them with the strength to persist in working on innovations. While some attempted to maintain a boundary between leisure time and work, a majority found themselves working in the evenings and weekends. Even when they tried to separate the time physically, their creative thinking skills continued to engage them mentally. Osborn (2004) elucidated that stamina is a vibrant life energy, a lively progression towards development, motion, productivity and well-being. It can be viewed as a constant theme of dynamic and proactive endurance. Based on the data interpretation, it can be inferred that employees with this energy have a strong affinity for innovations and are inherently predisposed to utilise it for driving change.

5 Final Interpretation

Based on the theoretical and empirical analysis of factors associated with IWB and the role of innovation energy, we propose the following definition for innovation energy:

> Innovation energy is a stimulus converting employees' innovation properties into IWB, which operates in a mutual dependency with the work context and the innovation properties.

We conceptualised the converting stimulus as:

> the energetic power which gives result drive, flow and stamina in the total IWB process.

In the IWB process, innovation energy is not an isolated factor; it is intricately linked to employees' innovation properties, work contextual factors and the resultant IWB. Diverging from general human energy, innovation energy signifies the employee's fervour in channelling it, particularly in the context of change processes. It propels meaningful transformations. This study contributes to the existing body of knowledge on IWB and engagement by shedding more light on the pivotal role played by innovation energy. The working influence of human energy is an understudied aspect in current motivational literature, as noted by Schippers and Hogenes (2011).

6 Practical Implications

We can draw implications for HRM and business administration practices related to stimulating and facilitating IWB based on our research. The primary overall recommendation is to create an appropriate work context for employees who demonstrate IWB. This work context includes providing supportive leadership, facilitating external contacts for co-creation, ensuring a balance of autonomy with suitable formalisation, aligning activities with the strategic direction and fostering the development of innovative teams. Fostering IWB requires harnessing employees' creativity, psychological empowerment, optimism and innovation energy to achieve incremental and radical innovations. It is crucial to recognise that building a conducive setting for IWB cannot follow a uniform approach; instead, it necessitates consideration of individual differences and unique characteristics for effective customisation. We advise policymakers and managers to be mindful of the five mentioned working mechanisms during managerial and HRM decision-making moments in order to stimulate the growth of innovation energy. This kind of energy yields result drive, flow and stamina of the employee with IWB, knowing that this has a mutually beneficial effect on the total IWB process, not only for these employees themselves but also for their work context.

7 Limitation

What we did not research is the role of organisational and team culture in the IWB process. During our research, we recognised as a side note that this could also influence IWB and innovation energy. The types of innovators in the three cases were very different; for example, we don't think that an innovator currently working at Philips would exhibit and receive as much energy as they

would at Topicus and vice versa because of the completely different cultures. In the third case study, we observed that innovators working at the law school were more risk-averse than those at the business administration school. However, both types of employees were innovative. Further research on this cultural factor could provide an extra dimension to our study.

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