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Satisfying Basic Psychological Needs to Foster Academic Staff Creativity and Performance under Technological Turbulence: A Conceptual Paper for Malaysian Comprehensive Universities

Nur Hidayah Ayob[1], Norshima Humaidi[2*]

[1]*Faculty of Business and Management, Universiti Teknologi MARA Cawangan Pahang, Kampus Jengka, 26400 Bandar Tun Abdul Razak, Jengka, Pahang, Malaysia.*
[2]*Faculty Faculty of Information Management, Universiti Teknologi MARA Cawangan Selangor, Kampus Puncak Alam, 42300 Bandar Puncak Alam, Selangor, Malaysia.*

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ABSTRACT

This conceptual paper develops an integrated framework explaining how the satisfaction of three basic psychological needs—autonomy, competence, and relatedness—enhances academic staff performance through individual creativity in Malaysian comprehensive universities, while considering technological turbulence as a boundary condition. Drawing on Self-Determination Theory (SDT), the Componential Theory of Creativity, and job performance literature, the framework theorises how basic psychological need satisfaction influences creativity and, subsequently, task and contextual performance. The paper proposes that autonomy, competence, and relatedness need satisfaction foster three creativity components: domain-relevant skills, creativity-relevant processes, and intrinsic task motivation. These components are expected to enhance task performance, including teaching quality, timely assessment, research productivity, and grant-related outputs, as well as contextual performance, such as mentoring, collegial support, knowledge sharing, and proactive service. Individual creativity is theorised to mediate the relationship between basic psychological need satisfaction and academic staff performance. Technological turbulence, reflected in rapid changes in digital platforms, analytics tools, artificial intelligence applications, and online learning requirements, is proposed as a boundary condition that may strengthen or weaken the motivation–creativity–performance relationships. Intrinsic task motivation and adaptive creativity-relevant processes may become increasingly important for maintaining performance in digitally transforming universities.

1. INTRODUCTION

Universities worldwide are operating under intensifying pressures to demonstrate measurable performance in research, teaching and learning, and community engagement while simultaneously responding to rapid digital transformation. These pressures are especially salient for education and universities that carry a

[2*] Corresponding author. Norshima Humaidi. *E-mail address*: norshima958@uitm.edu.my

broad mandate: they must excel in high-impact research and innovation, deliver high-quality undergraduate and postgraduate education, and provide professional and societal services to a diverse set of stakeholders. The confluence of performance pressures and digital transformation means that academic staff increasingly perform their work in environments characterized by frequent technological change—new learning management systems, analytics dashboards, hybrid and online pedagogies, AI-enabled tools for assessment and content creation, evolving cybersecurity and data governance requirements, and changing expectations from students and government agencies. While digital technologies can create new opportunities for productivity and innovative teaching and research, they also introduce uncertainty and complexity that can undermine motivation, increase role strain, and fragment academic work.

In Malaysia, the national higher education policy landscape emphasizes global competitiveness, research excellence, and the production of future-ready graduates. The Malaysia Education Blueprint 2015–2025 (Higher Education) outlines strategies to strengthen talent pipelines, improve governance and funding, and enhance institutional performance and international standing (Ministry of Education Malaysia, 2015). In parallel, the Malaysia Digital Economy Blueprint (MyDIGITAL) frames a national agenda to accelerate digital adoption and develop digital talent and infrastructure (Economic Planning Unit, 2021). More recently, the Ministry of Higher Education has issued a higher education digitalization action plan for 2025–2030, signalling continued emphasis on digital transformation across teaching, learning, research management, and institutional services (Ministry of Higher Education Malaysia, 2025). These policy signals are filtered through institutional performance systems (e.g., performance indicators, research outputs, university ranking metrics, and accreditation requirements) that influence academic work priorities and evaluation.

Despite these developments, the mechanisms that explain how universities can sustain and improve academic staff performance under rapid technological change remain incompletely specified. Existing research has examined numerous determinants of academic performance, including leadership, organizational support, rewards, workload, and digital readiness. However, many models treat academic staff as recipients of top-down policy or technological infrastructure rather than as motivated agents whose creativity is shaped by psychological needs, work design, and social context. Creativity is critical in academic settings: it underpins novel research ideas, innovative teaching design, problem-solving in administration and service, and adaptive responses to changing technology. Yet creativity is also fragile; it can be undermined by controlling climates, excessive bureaucracy, lack of support, and depleted motivation. A theoretically grounded explanation is needed to connect university work environments to motivational processes, creativity, and the multidimensional performance outcomes that universities seek.

This conceptual paper argues that self-determination theory (SDT) provides a parsimonious and evidence-based lens to explain why some academic staff thrive and innovate while others disengage when universities undergo digital transformation. SDT posits that satisfaction of three basic psychological needs—autonomy, competence, and relatedness—supports intrinsic motivation, internalization, and wellbeing, which in turn predict adaptive outcomes including performance (Ryan & Deci, 2000; Gagné & Deci, 2005; Van den Broeck et al., 2016). However, SDT alone does not specify the detailed mechanisms through which motivation becomes concrete creative action and, ultimately, observable task and contextual performance. For this reason, the paper integrates SDT with the componential theory of creativity, which argues that creative performance depends on domain-relevant skills, creativity-relevant processes, and intrinsic task motivation, as well as the social environment (Amabile, 1988, 1997, 2012). Integrating these theories enables the development of a higher-resolution pathway: need satisfaction cultivates motivational quality and psychological resources, which then shape creativity components, and these creativity components drive performance outcomes.

The paper makes three main contributions. First, it specifies a theory-driven model that links need satisfaction to academic staff performance through the multi-component mechanism of creativity. Second, it differentiates performance into task performance (core duties such as teaching and research outputs) and contextual performance (extra-role behaviours that sustain the social and psychological environment of the university), drawing on job performance scholarship (Borman & Motowidlo, 1997). Third, it introduces

technological turbulence as an environmental boundary condition that is increasingly central in universities, particularly as AI-enabled platforms and digital systems evolve at a fast pace (Jaworski & Kohli, 1993). Technological turbulence is theorized to intensify the importance of intrinsic motivation and adaptive cognitive processes for maintaining performance, thereby moderating motivation–creativity–performance relationships.

The remainder of the paper proceeds as follows. The next section contextualizes the study within Malaysian comprehensive universities and elaborates why technological turbulence is salient in these institutions. The following sections review the theoretical foundations, develop propositions and hypotheses, present the conceptual framework, propose an empirical research design suitable for testing the model, and discuss theoretical and practical implications for university leadership and policy.

2. LITERATURE REVIEW

2.1 Context and Problem Framing: Malaysian Comprehensive Universities in a Digital Transformation Era

Comprehensive universities, as a category of higher education institutions, typically pursue a balanced portfolio of missions that include (i) teaching and learning across multiple disciplines, (ii) research and knowledge creation, and (iii) service and engagement with industry and society. Such institutions often operate large organisational structures—multiple faculties, research centres, graduate schools, and administrative units—resulting in complex coordination challenges and competing performance priorities. In Malaysia, public universities are expected to contribute to national development goals by producing employable graduates, generating research outputs, commercialising innovation, and engaging communities. Performance is monitored through internal key performance indicators and external benchmarks. For example, international university ranking systems place heavy weight on research-related indicators such as citations and academic reputation (QS World Ranking, 2025). Although ranking systems are not the only measure of quality, their influence on strategic planning and institutional reputation is difficult to ignore.

At the same time, universities are facing a transformation in technological architecture that underpins academic work. Teaching and learning have become increasingly hybridised, blending face-to-face pedagogies with learning management systems, video-conferencing platforms, digital assessment tools, and learning analytics. Research management is also changing through digital grant submission systems, research information management platforms, open science infrastructures, and AI-assisted tools for literature discovery and data analysis. Administrative and service work is increasingly digital, involving enterprise systems, data dashboards, cybersecurity policies, and digital identity management. These developments can improve efficiency, transparency, and reach, but they also introduce technological turbulence: the rate at which technologies, platforms, and associated work practices change.

Technological turbulence has been conceptualised as the extent to which technology in an organisation's environment changes rapidly and unpredictably (Jaworski & Kohli, 1993). While originally developed in marketing and strategic management research, the concept translates well to higher education because universities now operate as technology-intensive organisations. A shift from one learning management system to another, the introduction of AI-enabled assessment or content tools, or new requirements for data privacy and cybersecurity can quickly render existing routines obsolete. Technological turbulence is not merely a technical issue; it changes task demands, skill requirements, and the social conditions under which academic staff collaborate and make meaning of their work.

In Malaysian universities, the policy environment reinforces the pace and scope of technological change. The Malaysia Digital Economy Blueprint (MyDIGITAL) articulates a national vision for a digitally enabled and technology-driven economy, including targets for digital adoption and talent development (Economic Planning Unit, 2021). The Malaysia Education Blueprint 2015–2025 (Higher Education) emphasises system-level transformation, including quality enhancement and stronger research and

innovation ecosystems (Ministry of Education Malaysia, 2015). The higher education digitalisation action plan 2025–2030 further outlines initiatives for digitally enabled teaching, learning, and institutional operations (Ministry of Higher Education Malaysia, 2025). As universities attempt to align with these agendas, academic staff may experience both opportunities (e.g., new tools for teaching and research) and demands (e.g., continuous upskilling, changes in evaluation practices, and increased digital administration).

A central problem is that universities often approach digital transformation primarily through infrastructure investment, system procurement, and compliance mechanisms. While these elements are necessary, they may be insufficient if they do not translate into sustained motivation and creative engagement among academic staff. For example, when digital tools are imposed in controlling ways (e.g., rigid templates, excessive monitoring, or unrealistic performance targets), they may undermine autonomy and intrinsic motivation, thereby reducing creativity and adaptability. Conversely, when digital transformation is implemented in supportive ways, offering meaningful choice, skill-building opportunities, and collegial support can satisfy psychological needs and stimulate creative experimentation. Thus, the paper takes the position that academic performance under technological turbulence cannot be understood only through structural or technical variables; it requires attention to psychological needs and creativity processes.

Table 1 summarises key characteristics of comprehensive universities that intensify the relevance of the proposed framework. These characteristics are not unique to Malaysia, but they are salient in the Malaysian public university sector where the accountability and transformation agenda is strong.

Table 1. Characteristics of Comprehensive Universities and Relevance to the Proposed Model

Characteristic	Implication for academic staff work	Relevance to the proposed model
Multi-mission mandate (teaching–research–service)	Academic staff must juggle varied goals, timelines, and stakeholders; role breadth increases cognitive load and coordination demands.	Need satisfaction may protect motivation and wellbeing; creativity is required to integrate and priorities tasks.
High accountability and performance indicators	Outputs (publications, grants, student outcomes, service) are monitored and benchmarked; pressure can be motivating or controlling.	Autonomy-supportive climates are expected to sustain intrinsic motivation and creativity under performance pressures.
Rapid digitalization of teaching and administration	Platforms, analytics, and AI tools frequently change; staff must adapt pedagogy, assessment, and work routines.	Technological turbulence may strengthen the role of creativity-relevant processes and intrinsic motivation in predicting performance.
Interdependence and collegiality norms	Teaching teams, research groups, and departmental governance require collaboration and discretionary support behaviours.	Relatedness needs satisfaction and is expected to predict contextual performance (mentoring, sharing, helping).
Disciplinary diversity and specialized expertise	Staff vary in domain skills and research methods; skill development is continuous and unevenly distributed.	Competence needs satisfaction and investment in domain-relevant skills are expected to underpin creative outputs and task performance.

2.2 Theoretical Foundations

2.2.1 Self-Determination Theory and Basic Psychological Needs

Self-determination theory (SDT) is a broad meta-theory of human motivation that explains how social contexts support or undermine volitional functioning, psychological growth, and wellbeing (Ryan & Deci, 2000). SDT differentiates between autonomous motivation (engaging in work because it is personally meaningful or inherently interesting) and controlled motivation (engaging in work due to external pressure, rewards, or guilt). A central proposition is that autonomous motivation and internalisation are facilitated when individuals experience satisfaction of three basic psychological needs: autonomy (a sense of volition

and choice), competence (a sense of effectiveness and mastery), and relatedness (a sense of belonging and mutual care). These needs are posited to be universal and essential for optimal functioning, although the ways they are supported can vary across cultures and settings.

In organisational contexts, SDT has been used to explain employee engagement, performance, persistence, and wellbeing. Gagné and Deci (2005) argue that work environments that support autonomy (e.g., providing meaningful rationales, acknowledging perspectives, offering choice), develop competence (e.g., optimal challenges, feedback, resources), and strengthen relatedness (e.g., respectful leadership, team cohesion) promote internalisation of organisational goals and sustain higher-quality motivation. Empirical evidence also links need satisfaction to performance and wellbeing across work settings (Baard et al., 2004) and shows that need satisfaction uniquely predicts outcomes beyond other motivational constructs (Van den Broeck et al., 2016).

For academic staff, the relevance of SDT is intuitive. Academic roles typically demand high levels of self-regulation, complex problem solving, and sustained effort in uncertain environments (e.g., publishing, grant acquisition, student development). These tasks often require initiative and creativity rather than routine compliance. However, academic work can also involve controlled pressures such as performance targets, ranking metrics, administrative compliance, and resource constraints. SDT therefore offers a theoretically coherent way to explain variation in how academics respond to digital transformation initiatives, performance management systems, and changing institutional priorities.

2.2.2 Componential Theory of Creativity and the Micro Foundations of Individual Creativity

Creativity research distinguishes idea generation from later stages of idea implementation (Anderson et al., 2014). In higher education, academics are expected to generate novel and useful ideas in research, design learning activities, develop solutions for organisational problems, and contribute to innovative programmed. The componential theory of creativity conceptualises creativity as arising from the confluence of three internal components—domain-relevant skills, creativity-relevant processes, and intrinsic task motivation—along with a supportive social environment (Amabile, 1988, 1997, 2012).

Domain-relevant skills refer to the knowledge, technical skills, and expertise that enable individuals to work effectively within a discipline or task domain. For academic staff, domain skills include subject-matter expertise, methodological competence, pedagogical knowledge, and familiarity with disciplinary norms and standards. Creativity-relevant processes refer to cognitive and personality processes that support flexible thinking, problem redefinition, tolerance for ambiguity, and persistence in the face of setbacks. Intrinsic task motivation refers to interest and enjoyment in the task itself, which supports deep engagement, exploration, and sustained effort. Amabile (1997) emphasises that intrinsic motivation is particularly important because it influences how individuals deploy their skills and processes; when motivation is high-quality and internally endorsed, individuals are more likely to engage in cognitive exploration that yields novel solutions.

The componential theory is useful for this paper because it clarifies that "being creative" is not a unitary trait; rather, it involves (i) having the expertise to produce ideas that are useful and feasible, (ii) having cognitive strategies that facilitate novelty, and (iii) having motivation that sustains effortful exploration. The framework also aligns with SDT, because intrinsic motivation is a core SDT outcome of need satisfaction, and because autonomy-supportive environments are expected to catalyse creative engagement. Integrating SDT and componential theory allows this paper to theories a clear mechanism: satisfaction shapes creativity components, which in turn translate into performance.

2.2.3 Academic Staff Performance: Task and Contextual Dimensions

Job performance research commonly differentiates between task performance and contextual performance (Borman & Motowidlo, 1997). Task performance refers to behaviours that directly contribute to the technical core of the organisation. In universities, task performance includes teaching preparation and delivery, assessment design and feedback, supervision of postgraduate students, conducting research and

publishing, writing grant proposals, and performing core administrative roles aligned with one's appointment. Contextual performance, in contrast, refers to behaviours that support the organisational, social, and psychological environment in which the technical core operates. In higher education, contextual performance includes helping colleagues, mentoring junior academics, sharing teaching resources, voluntarily participating in committees, supporting departmental initiatives, and engaging in collegial citizenship behaviours that improve coordination and morale.

This distinction is important because digital transformation and technological turbulence can affect both performance dimensions differently. Technological change can directly alter task routines (e.g., migrate courses to new platforms), but it can also influence the social fabric of departments (e.g., peer support for digital teaching, collective learning). A model that only focuses on research output or teaching quality might miss the behavioural glue that sustains institutional functioning during transformation. The proposed framework therefore treats task and contextual performance as distinct but related outcomes.

2.3. Literature Synthesis and Hypothesis Development

This section develops the logic for the proposed relationships in Figure 1. The argument proceeds in three steps. First, it explains why basic psychological need satisfaction is expected to increase the three creativity components. Second, it explains how the three creativity components translate into task and contextual performance in academic work. Third, it elaborates the mediating role of creativity and the moderating role of technological turbulence.

2.3.1 Basic Psychological Need Satisfaction and Intrinsic Task Motivation

SDT argues that autonomy, competence, and relatedness are essential "nutriments" for autonomous motivation (Ryan & Deci, 2000). When individuals experience autonomy, they perceive their actions as self-endorsed, meaningful, and aligned with personal values. In universities, autonomy satisfaction can arise from having discretion in course design, research agenda setting, and pedagogical choices, as well as from autonomy-supportive leadership that provides rationales rather than pressure. Competence emerges when academics feel capable of meeting challenging research and teaching demands through adequate resources, timely feedback, and opportunities to develop skills. Relatedness satisfaction reflects feeling respected and connected to colleagues, students, and supervisors, which is particularly important in collaborative teaching and interdisciplinary research environments.

In work settings, satisfaction predicts autonomous motivation and engagement (Gagné & Deci, 2005; Van den Broeck et al., 2016). Baard et al., (2004) show that intrinsic need satisfaction relates positively to performance and wellbeing in work organizations. In academic contexts, intrinsic task motivation is crucial because scholarly work often involves long cycles, uncertain outcomes (e.g., revise-and-resubmit processes, grant competition), and complex tasks that cannot be completed effectively through compliance alone. Intrinsic motivation is also central within the componential theory of creativity, where it is positioned as a proximal driver of creative effort and exploration (Amabile, 1988, 1997).

Need satisfaction should therefore increase intrinsic task motivation among academic staff. Autonomy satisfaction enables academics to invest energy in work because they "own" their goals; competence satisfaction increases expectancy and self-efficacy beliefs that effort will be effective; and relatedness satisfaction provides social support and psychological safety that encourages experimentation and persistence.

H1a: Autonomy need satisfaction is positively related to intrinsic task motivation.

H1b: Competence need satisfaction is positively related to intrinsic task motivation.

H1c: Relatedness need satisfaction is positively related to intrinsic task motivation.

2.3.2 Basic Psychological Need Satisfaction and Creativity-Relevant Processes

Creativity-relevant processes include cognitive strategies and dispositions that support novelty, such as problem redefinition, divergent thinking, tolerance for ambiguity, and perseverance when facing obstacles

(Amabile, 1988). These processes are not merely personality traits; they can be fostered or constrained by social contexts. For instance, climates that punish failure or emphasize rigid compliance can reduce risk-taking and exploration, while autonomy-supportive and psychologically safe climates can encourage experimentation.

From an SDT perspective, need satisfaction should strengthen creativity-relevant processes through several mechanisms. Autonomy satisfaction reduces defensive, controlled regulation and enables open cognitive exploration. Competence satisfaction supports mastery orientation and persistence; individuals who feel effective are more willing to engage in challenging cognitive work and to learn from feedback. Relatedness satisfaction strengthens psychological safety and the willingness to share early-stage ideas, seek constructive feedback, and engage in collaborative problem solving. Creativity and innovation reviews consistently highlight the importance of supportive contexts and intrinsic motivation in enabling creative cognition (Shalley et al., 2004; Anderson et al., 2014). In a university setting, creativity-relevant processes may manifest in the willingness to redesign assessments, experiment with instructional methods, adapt research methods, or pursue interdisciplinary questions.

H2a: Autonomy need satisfaction is positively related to creativity-relevant processes.

H2b: Competence need satisfaction is positively related to creativity-relevant processes.

H2c: Relatedness need satisfaction is positively related to creativity-relevant processes.

2.3.3 Basic Psychological Need Satisfaction and Domain-Relevant Skills

Domain-relevant skills represent an individual's knowledge and expertise within a task domain, which in academia includes disciplinary knowledge, methodological skills, pedagogical competence, and the ability to use research and teaching technologies. While these skills are influenced by education and experience, they also depend on ongoing learning and deliberate practice. SDT suggests that satisfaction supports learning by fostering autonomous motivation, curiosity, and persistence (Ryan & Deci, 2000). When academics experience competence and autonomy support, they are more likely to engage in professional development, adopt new research tools, and invest in skill upgrading, including digital competencies relevant for technology-enabled teaching and research.

Need satisfaction can also influence the allocation of attention and effort toward skill development. Under controlled or threatening conditions, individuals may focus on impression management and short-term compliance rather than deep learning. Conversely, autonomy-supportive climates can encourage academics to pursue mastery goals and to develop expertise that supports higher-quality outputs. Although domain skills may evolve more slowly than motivational states, the proposed framework treats domain-relevant skills as a malleable component that can be strengthened through sustained need satisfaction and motivated learning (Gagné & Deci, 2005; Van den Broeck et al., 2016).

H3a: Autonomy need satisfaction is positively related to domain-relevant skills.

H3b: Competence need satisfaction is positively related to domain-relevant skills.

H3c: Relatedness need satisfaction is positively related to domain-relevant skills.

2.3.4 Creativity Components and Academic Staff Task Performance

Task performance refers to effectiveness in core role duties (Borman & Motowidlo, 1997). For academic staff, these duties include preparing and delivering teaching, designing assessments, supervising students, conducting research, publishing, and fulfilling required administrative roles. Creativity contributes to task performance because academic work is increasingly characterized by ill-structured problems. For teaching, academics must tailor pedagogy to diverse student backgrounds, integrate new technologies, and design assessments that maintain integrity and learning value. For research, academics must formulate novel questions, select methods, interpret ambiguous findings, and communicate contributions within competitive scholarly communities.

Within componential theory, domain-relevant skills are necessary to ensure that generated ideas are not only novel but also useful and aligned with disciplinary standards (Amabile, 1988). Creativity-relevant processes facilitate the generation and refinement of original approaches. Intrinsic task motivation supports sustained effort over the long cycles required to produce publishable research, secure grants, and innovate in teaching. Empirical studies in organisations show that creativity and related constructs (e.g., creative self-efficacy) predict performance outcomes, though the relationship may depend on context and evaluation criteria (Oldham & Cummings, 1996; Tierney & Farmer, 2002).

H4a: Domain-relevant skills are positively related to task performance.

H4b: Creativity-relevant processes are positively related to task performance.

H4c: Intrinsic task motivation is positively related to task performance.

2.3.5 Creativity Components and Academic Staff Contextual Performance

Contextual performance includes discretionary behaviours that support the organizational environment, such as helping others, cooperating, and taking initiative (Borman & Motowidlo, 1997). In universities, contextual performance is visible in mentoring junior colleagues, sharing teaching resources, participating in departmental service, supporting student activities, and contributing to collaborative research culture. Such behaviours are particularly important in comprehensive universities because coordination across programmed and research groups is complex.

Creativity can contribute to contextual performance in two ways. First, the cognitive flexibility associated with creativity-relevant processes may facilitate constructive problem solving in committees, conflict management, and process improvements. Second, intrinsic motivation and relatedness can motivate discretionary contributions that go beyond formal job descriptions. Domain-relevant skills also matter because knowledgeable academics can provide higher-quality mentorship and guidance. Thus, creativity components are expected to predict contextual performance alongside task performance, especially when contextual performance is conceptualized as proactive and improvement-oriented rather than merely cooperative.

H5a: Domain-relevant skills are positively related to contextual performance.

H5b: Creativity-relevant processes are positively related to contextual performance.

H5c: Intrinsic task motivation is positively related to contextual performance.

2.3.6 Individual Creativity as a Mediating Mechanism

The preceding arguments imply that need satisfaction influences performance through its effects on creativity components. This is consistent with SDT's proposition that supportive contexts facilitate internalisation and autonomous motivation, which then predict adaptive outcomes (Ryan & Deci, 2000; Gagné & Deci, 2005). It is also consistent with the componential theory's emphasis that motivation and cognitive processes translate expertise into creative outputs and outcomes (Amabile, 1988). In academic work, need satisfaction may not directly translate into publications or teaching outcomes if academics lack the motivation to engage deeply, the cognitive strategies to innovate, or the skills required to implement ideas. Therefore, modelling creativity as a mediator clarifies the "how" and "why" of performance enhancement.

H6: The relationship between basic psychological need satisfaction and academic staff performance is mediated by individual creativity components (domain-relevant skills, creativity-relevant processes, and intrinsic task motivation).

2.3.7 Technological Turbulence as a Boundary Condition

Technological turbulence captures the pace and unpredictability of technological changes in an organisation's environment (Jaworski & Kohli, 1993). In universities, such turbulence includes frequent updates to learning platforms, new AI-enabled tools, shifts in digital assessment requirements, evolving expectations for online engagement, and changes in research and administrative systems. Under low

turbulence, task routines may be relatively stable, allowing academics to rely on established expertise and procedures. Under high turbulence, routines become less reliable; academics must adapt quickly, learn new tools, and reconfigure workflows.

Contingency reasoning suggests that the value of creativity components may increase under turbulence because adaptive cognition and intrinsic motivation become more central for coping with change. For example, creativity-relevant processes such as flexibility and problem reframing may be especially predictive of performance when academics need to redesign teaching materials for new platforms or respond to AI-related academic integrity issues. Similarly, intrinsic motivation may be essential for persisting through continual learning demands without burning out. In contrast, when turbulence is low, domain-relevant skills alone may be sufficient to produce acceptable performance. Prior work on turbulent environments and dynamic capabilities supports the view that the payoffs of adaptive capabilities become more pronounced when environments are turbulent (Pavlou & El Sawy, 2006).

H7a: Technological turbulence strengthens the relationship between intrinsic task motivation and academic staff performance (task and contextual).

H7b: Technological turbulence strengthens the relationship between creativity-relevant processes and academic staff performance (task and contextual).

H7c: Technological turbulence weakens the extent to which domain-relevant skills alone predict performance, such that skills are less sufficient under high turbulence unless accompanied by adaptive processes and motivation.

Taken together, the hypotheses specify a comprehensive model linking motivational foundations (need satisfaction), creativity mechanisms (skills, processes, motivation), performance outcomes (task and contextual), and a contextual moderator (technological turbulence).

2.4. Conceptual Framework

Figure 1 presents the proposed conceptual framework. In the model, basic psychological need satisfaction (autonomy, competence, relatedness) is expected to influence academic staff performance indirectly through individual creativity components (domain-relevant skills, creativity-relevant processes, and intrinsic task motivation). Technological turbulence is proposed to moderate selected relationships between creativity components and performance, reflecting the idea that adaptive motivation and cognitive flexibility become more important when digital technologies change rapidly.

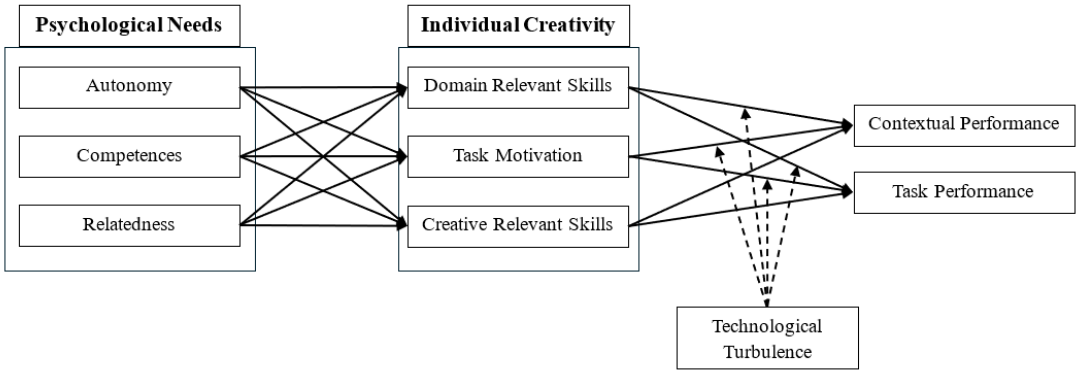

Fig. 1. Proposed conceptual framework linking basic psychological need satisfaction, creativity components, academic staff performance, and technological turbulence.

3.1 Proposed Research Design for Empirical Validation

Although this paper is conceptual, it is designed to be readily testable. This section outlines a research design suitable for empirical validation in Malaysian comprehensive universities. The intent is to provide a methodological blueprint for future studies or for converting the conceptual model into a full empirical journal article.

3.1.1 Research Design and Unit of Analysis

A cross-sectional survey design is appropriate as a first step to test the nomological network among need satisfaction, creativity components, technological turbulence, and performance. The unit of analysis is an individual academic staff member. Survey-based research is widely used in organizational behaviour and higher education management because it enables the collection of perceptual and self-reported indicators for motivational constructs and contextual perceptions, which are not directly observable (Podsakoff et al., 2003). Nevertheless, to strengthen causal inference and reduce common method bias, future research could incorporate time-lagged designs (e.g., collecting need satisfaction and turbulence at Time 1, creativity at Time 2, and performance at Time 3), or multi-source data (e.g., supervisor ratings of contextual performance).

3.1.2 Population, Sampling Strategy, And Sample Size

The target population comprises academic staff in Malaysian comprehensive universities (public universities with broad disciplinary offerings and research mandates). A sampling frame can be constructed using faculty/staff lists obtained through institutional cooperation. Because academic staff are heterogeneous across faculties and ranks, a stratified sampling strategy is recommended to ensure representation across key strata (e.g., faculty/discipline group, academic rank, employment category). If access constraints limit probability of sampling, researchers should transparently report recruitment procedures and assess non-response bias where possible.

For sample size, PLS-SEM is robust for complex models and is suitable when the objective is theory development and prediction. Sample size can be justified using statistical power analysis. For example, Cohen's (1992) "power primer" provides conventional benchmarks for effect sizes, while G*Power enables an a priori power analysis for multiple regression (Faul et al., 2009). Following common recommendations, a minimum sample should provide 80% power to detect small-to-medium effects (e.g., $f^2 = 0.10–0.15$) at $\alpha = 0.05$ for the maximum number of predictors of any endogenous construct. In practice, for a model where performance is predicted by multiple creativity components and interaction terms, a sample of 250–400 is often adequate and helps ensure stable bootstrapped estimates.

3.1.3 Measures and Instrument Development

Basic psychological need satisfaction can be measured using established scales adapted to work settings. For autonomy, competence, and relatedness need satisfaction at work, researchers can adapt items from SDT-based work need satisfaction measures, ensuring contextual fit for academic work (Van den Broeck et al., 2016). Example autonomy items include perceptions of choice and self-direction in work; competence items capture effectiveness and mastery; relatedness items capture belonging and connectedness with colleagues.

The componential creativity components can be operationalized as follows. Domain-relevant skills can be captured using self-assessed expertise indicators relevant to academic work (e.g., research methods competence, discipline-specific knowledge, pedagogical content knowledge, and digital tool proficiency). Creativity-relevant processes can be measured with items capturing flexible thinking, problem redefinition, and experimentation behaviours, drawing on creativity process scales and workplace creativity measures (Amabile, 1988; Shalley et al., 2004). Intrinsic task motivation can be measured using items capturing interest and enjoyment in academic tasks, drawing on SDT work motivation measures (Gagné & Deci, 2005; Baard et al., 2004).

Academic staff performance can be measured as task performance and contextual performance. Task performance items should reflect core academic duties (e.g., teaching effectiveness, research productivity behaviours, timely completion of required tasks). Contextual performance items should reflect discretionary contribution behaviours (e.g., helping colleagues, mentoring students, participating constructively in committees), guided by the task–contextual distinction (Borman & Motowidlo, 1997). Because objective indicators (e.g., publication counts) may not be comparable across disciplines and time windows, self-reported behavioural frequency measures can be used; however, where feasible, researchers can triangulate with objective proxies or supervisor ratings.

Technological turbulence can be measured using the established environmental turbulence scale originally developed by Jaworski and Kohli (1993), adapted to university settings. Items typically capture the rate of change in technology, the unpredictability of technological developments, and the speed with which technology becomes obsolete. In universities, items can reference rapid changes in learning platforms, digital assessment tools, AI applications, and administrative systems.

3.1.4 Data Analysis Strategy: PLS-SEM and Robustness Checks

The conceptual model can be tested using partial least squares structural equation modelling (PLS-SEM). PLS-SEM is appropriate for complex models with mediation and moderation, and for research that emphasizes prediction and theory extension (Hair et al., 2022). The analysis should follow established evaluation procedures: (i) assess the measurement model for reliability and validity (indicator loadings, composite reliability, average variance extracted), (ii) assess discriminant validity using the HTMT criterion (Henseler et al., 2015), (iii) estimate the structural model using bootstrapping for path significance, and (iv) evaluate model predictive power using R^2, effect sizes (f^2), and predictive relevance (Q^2).

Moderation by technological turbulence can be tested by creating interaction terms (e.g., product indicator approach) between turbulence and each creativity component. If the model includes multiple interactions, researchers should consider mean-centering indicators and assessing potential multicollinearity. Common method bias should be managed procedurally (e.g., protecting anonymity, separating sections, varying scale anchors) and statistically (Podsakoff et al., 2003). A practical diagnostic for common method variance in PLS-SEM is full collinearity assessment using variance inflation factors (VIFs) (Kock, 2015), although interpretation should be cautious and complemented by other checks.

3.1.5 Ethical Considerations and Study Administration

Research involving academic staff requires attention to confidentiality, perceived power dynamics, and institutional sensitivity. Ethical approval should be obtained from relevant university research ethics committees. Participants should be informed about voluntary participation, the right to withdraw, confidentiality, and data protection procedures. Because performance perceptions can be sensitive, the survey should avoid collecting identifiable data unless necessary. Where multi-source designs are used, researchers should ensure that supervisor ratings cannot be linked to individuals by third parties.

3.1.6 Suggested Measurement Items (Illustrative)

Table 2 provides illustrative items that can be adapted for the Malaysian university context. Researchers should pilot-test items for clarity and cultural appropriateness, conduct expert validation, and, if bilingual instruments are required, use forward–backward translation procedures.

Table 2. Illustrative Measurement Items (adapt and validate for context)

Psychological Needs

Construct	Sample Items	Indicative Sources
Autonomy	I feel that the decisions I make regarding my job responsibilities reflect my personal values. I am free to express my ideas in important work decisions.	Self-Determination Theory; Edward Deci & Richard Ryan

	My job allows flexibility in managing workload.	
Competence	I am capable of handling difficult aspects of my job.	Perceived Competence; Social Cognitive Theory
	I am given opportunities to develop new skills.	
	I complete tasks efficiently and at high standards.	
Relatedness	I have strong and trusting relationships with colleagues.	Relatedness Need
	I feel a sense of belonging in my team.	
	I frequently collaborate with others.	

Individual Creativity

Construct	Sample Items	Indicative Sources
Domain-Relevant Skills	I seek different perspectives when solving problems.	Componential Theory of Creativity
	I know how to initiate and implement ideas.	
	I am committed to solving problems.	
Creativity-Relevant Skills	I am willing to try new ways of doing things.	Creative Thinking Skills
	I explore opportunities to create new ideas.	
	I tolerate uncertainty in new opportunities.	
Task Motivation	I am motivated and passionate about change.	Intrinsic Motivation
	I influence others to embrace change.	
	I create opportunities for others to grow.	

Moderating Technological Turbulences

Construct	Sample Items	Indicative Sources
Technological Turbulence	Technology in this university is changing rapidly.	Environmental Turbulence; Danny Miller
	Technological changes create opportunities.	
	Many innovations arise from technological breakthroughs.	

Dependent Variable Task Performance

Construct	Sample Items	Indicative Sources
Task Performance	I complete my work on time.	Job Performance Theory
	I set correct priorities.	
	I perform efficiently.	

Dependent Variable Contextual performance

Construct	Sample Items	Indicative Sources
Contextual Performance	I take initiative when tasks are completed.	Contextual Performance
	I continuously improve my skills.	
	I seek new challenges.	

Note: Sources are indicative; researchers should obtain permission where required and ensure scale validity in the target context.

4. RESULT AND DISCUSSION

4.1 Expected Theoretical Contributions

The proposed framework offers several theoretical contributions to higher education management and organisational behaviour research.

First, it provides an integrated motivational–cognitive explanation for academic staff performance by combining SDT and the componential theory of creativity. While SDT has been widely used in education research to explain student outcomes, its application to academic staff performance in a digitally transforming university context remains less developed. By explicitly modelling creativity components, the paper bridges SDT's motivational mechanisms with creativity scholarship's micro foundations of novel and useful problem solving.

Second, the framework clarifies how and why need satisfaction matters by mapping it to distinct creativity components rather than treating "creativity" as a single latent outcome. This distinction supports more precise theorising and measurement. For example, autonomy satisfaction may more strongly predict creativity-relevant processes and intrinsic motivation, while competence satisfaction may be more strongly linked to domain-relevant skills. These nuances enable future empirical studies to test differential pathways and refine theory.

Third, the paper differentiates academic staff performance into task and contextual dimensions. Much of the higher education literature focuses on narrow output (e.g., publication counts) or broad satisfaction measures. By using the task–contextual distinction (Borman & Motowidlo, 1997), the framework recognises that universities rely not only on core task achievement but also on discretionary behaviours that sustain collegial functioning, knowledge sharing, and collective learning—especially during periods of change.

Fourth, the introduction of technological turbulence as a boundary condition extends both SDT and creativity research into a contemporary university context. SDT recognises that social environments influence motivation, but it does not always specify how macro-level contextual change affects motivational dynamics. Similarly, creativity research highlights the influence of environment but often operationalises it through immediate work climate. By incorporating turbulence, the framework reflects a realistic condition of modern universities: digital tools and requirements change rapidly, and adaptability becomes a key performance driver.

Finally, the model creates a foundation for future research on strategic human capital and dynamic capabilities in universities. When academic staff maintain autonomous motivation and adaptive creativity-relevant processes, universities may be better positioned to reconfigure routines and develop new capabilities in response to technological and policy changes (Pavlou & El Sawy, 2006). Thus, the framework links individual-level mechanisms to broader organisational adaptability.

4.2 Practical Implications for University Management and Policy

The framework suggests that universities seeking to improve academic staff performance under digital transformation should treat motivation and need satisfaction as strategic levers rather than as "soft" issues.

Autonomy-supportive leadership and governance. University leaders and heads of department can support autonomy by providing meaningful rationales for digital initiatives, involving academics in decisions about platform adoption and teaching redesign, allowing flexibility in how targets are achieved, and reducing unnecessary controls. Autonomy support does not mean absence of accountability; rather, it means aligning performance expectations with professional values and giving academics discretion in implementation. Such practices are consistent with SDT and are likely to sustain intrinsic motivation (Gagné & Deci, 2005).

Competence development and enabling resources. Competence satisfaction can be enhanced through targeted professional development, mentoring, and timely feedback. In technologically turbulent contexts,

competence includes digital pedagogical competence, data literacy, and ethical understanding of AI tools. Universities can invest in learning design support units, micro-credential training, communities of practice, and accessible help desks. Importantly, competence support should be calibrated to academic ranks and disciplines; early-career academics and those in non-technical disciplines may need different support to achieve mastery and confidence.

Relatedness and a collaborative climate. Relatedness satisfaction can be strengthened by cultivating collegiality, psychological safety, and recognition of collaborative contributions. This is especially important when academics are expected to share teaching resources, co-develop online materials, and collaborate on interdisciplinary research. Universities can institutionalise peer mentoring, cross-faculty learning circles, and recognition systems that value mentoring and knowledge sharing as part of performance management.

Designing digital transformation as a motivational process. Technological turbulence is not inherently harmful; it can also be an opportunity for innovation. However, rapid change can undermine motivation when it is experienced as unpredictable, imposed, or unsupported. Leaders should therefore manage turbulence through clear communication, phased implementation, piloting, and feedback loops. Where possible, universities can provide stable "core" platforms while allowing experimentation with optional tools, balancing standardisation and autonomy.

Performance management and evaluation. The model highlights the importance of evaluating not only outputs but also the behaviours and processes that support performance. Performance appraisal systems that only reward publications may inadvertently reduce contextual performance such as mentoring and service, and they may create controlled pressure that undermines autonomy. A more balanced evaluation system that recognises teaching innovation, collegial contributions, and professional development efforts can better align with SDT principles and sustain creativity.

These implications align with Malaysia's broader ambitions to build digitally capable and globally competitive higher education institutions. They suggest that policy initiatives should be coupled with attention to motivational climates and human factors to translate digital investments into sustained performance.

4.3 Limitations and Directions for Future Research

Because this paper is conceptual, it does not provide empirical estimates of effect sizes or causal evidence. The proposed relationships should therefore be tested in multiple contexts and with diverse methodological approaches. Future research can strengthen inference by using longitudinal designs that capture changes in need of satisfaction, creativity, and performance over time, particularly during major digital transformation initiatives. Multi-source designs can also reduce self-report bias by obtaining supervisor ratings, peer assessments, or objective indicators (e.g., teaching evaluation scores, publication and grant metrics, service contributions).

The model focuses on basic psychological needs and creativity components, but other mechanisms may also be relevant in academic settings, such as organisational justice, role overload, leadership styles, and institutional culture. Future studies may integrate these constructs as antecedents of need satisfaction or as additional mediators and moderators. Moreover, technological turbulence is conceptualised at the individual perception level in survey measures; future work could operationalise turbulence using objective indicators, such as frequency of platform changes or policy updates, and examine cross-level effects (department-level turbulence influencing individual outcomes).

Cultural and institutional contexts can also shape how autonomy, competence, and relatedness are experienced. Although SDT proposes that basic needs are universal, the forms of need support and the meanings attached to autonomy can vary. Malaysian universities, for example, may have distinctive governance structures and cultural norms influencing how academics perceive discretion and belonging.

Cross-cultural comparative research can examine whether the model generalises across different national and institutional settings.

Finally, future research could extend the framework to examine outcomes beyond performance, such as wellbeing, burnout, turnover intention, and innovative work behaviour. This would provide a more holistic understanding of academic work sustainability under digital transformation.

5. CONCLUSION

This conceptual paper proposes an integrated model explaining how basic psychological needs satisfaction can enhance academic staff performance through individual creativity components, and how these relationships may change under technological turbulence in Malaysian comprehensive universities. By combining SDT with the componential theory of creativity and incorporating the task–contextual performance distinction, the paper offers a coherent theoretical account that is both academically grounded and practically relevant. Empirical testing of the model can advance understanding of motivation and creativity in higher education and can inform leadership practices that translate digital transformation agendas into sustainable performance improvements.

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7. CONFLICT OF INTEREST STATEMENT

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

8. AUTHORS' CONTRIBUTIONS

Nur Hidayah Ayob: formulation of core research questions, objectives and hypotheses, writing of the original draft, organising the literature review, synthesising findings, interpreting the results, and creation of data visualisations and figures that supported the theoretical and empirical components of the study; **Norshima Humaidi:** theoretical development of the manuscript, intellectual leadership and supervision, design and development of the research methodology (including the selection of theoretical constructs, survey instruments, and analytical approaches), and reviewing and editing the manuscript for coherence, scholarly tone, and adherence to journal guidelines. Both authors contributed their expertise towards improving the clarity and overall quality of the manuscript during the final stages of revision.

9. DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES

This manuscript was developed entirely by the authors without the use of artificial intelligence (AI) tools or automated content generation services. All writing, analysis, and interpretations are the sole responsibility of the authors.

10. DATA AVAILABILITY/SUPPLEMENTARY MATERIALS

This study is conceptual in nature and does not involve the collection or analysis of primary or secondary data. Therefore, no datasets were generated or analysed during the current study.

11. ETHICS STATEMENT

Ethical approval for this study was obtained from Universiti Teknologi MARA (UiTM). However, as this research is conceptual and does not involve human participants or data collection, informed consent was not required.

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About the Authors

Nur Hidayah Ayob is a lecturer at the Faculty of Business and Management, Universiti Teknologi MARA Cawangan Pahang. Her main research activities are human resource management and social sciences. She can be contacted via email at nurhidayahayob@uitm.edu.my.

Norshima Humaidi, PhD is an Associate Professor at the Faculty of Information Management, Universiti Teknologi MARA Puncak Alam, Selangor. Her main research activities are health information systems and social sciences. She can be contacted via email at norshima@uitm.edu.my.