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Relational Heritage in Retail- Reimagining 1950S Practices for the Future of Consumer Experience

By Professor Gilles Pache

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Abstract- Food retailing in the 1950s was defined by strong social ties between shopkeepers and customers, grounded in geographical proximity and mutual trust. These relationships went beyond mere economic transactions, fostering spaces of human interaction where consumer loyalty was built on reciprocity and respect. Small shops, located at the heart of their communities, anticipated customers' needs and cultivated secure, familiar environments that reinforced social cohesion. While consumer experience remains a priority today, new dynamics- especially the integration of AI and growing partnerships with local producers- are reshaping the retail landscape. Despite these transformations, the core value of human connection remains central to food retailing. This position paper highlights the continuity between past practices and present trends, emphasizing how values such as proximity and interpersonal relationships, though redefined, continue to be essential to the consumer experience. By doing so, it offers a critical analysis of how traditional retail models can be reimagined to address contemporary challenges while preserving their social foundations.

Keywords: 1950s, consumer experience, Europe, food retailing, human interaction, local roots, trust, loyalty, proximity, social capital, sustainable logistics.

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1. INTRODUCTION

Academic insight often arises in unexpected moments: a reflective conversation over coffee, the vivid recollections of a nonagenarian describing home-delivered milk, or the memory of a neighborhood butcher who extended credit to loyal customers. These practices, once widespread in 1950s Europe, are now often romanticized as emblems of a simpler, more human-centered era. However, a closer examination reveals structural shortcomings in these retail arrangements, including exclusionary gender roles, restricted access for lower-income populations, and the perpetuation of local economic disparities. In today's context- where sustainability, localism, and consumer ethics shape public discourse- such historical models offer more than sentimental appeal. They represent business practices grounded in trust, community, and enduring social ties, qualities that remain highly relevant in rethinking contemporary retail strategies. This prompts a critical question: *Could these seemingly outdated frameworks serve as a foundation for reconciling economic efficiency with environmental and social accountability in modern commerce?* Viewed

through this lens, the past is not merely a source of nostalgia but a repository of relational principles that can inform and enrich retail models in a rapidly evolving landscape.

The relational approach to food retailing is rooted in a robust theoretical tradition that views exchange as a socially embedded process, grounded in trust, reciprocity, and local connections. Macneil (1980) was one of the pioneers in emphasizing the importance of long-term relationships in economic transactions, challenging the purely transactional view of trade. This concept was further developed by Granovetter (1985), whose work on social embeddedness underscores the pivotal role of interpersonal ties in shaping economic behavior. In the field of marketing, several scholars have demonstrated that the emotional dimensions of consumption serve as strategic levers, particularly in the context of convenience retailing (Arnould & Thompson, 2005; Gopaldas, 2015). More recent studies suggest that, even within an increasingly digitalized retail landscape, consumers continue to value human interaction, perceiving it as more authentic, empathetic, and ethically grounded (Rosenbaum *et al.*, 2017; Pol *et al.*, 2020; Rasmusen *et al.*, 2022). Thus, the relational approach should not be viewed as an outdated concept, but rather as a contemporary strategic asset capable of reconciling economic performance with social responsibility. Against this backdrop, revisiting historical forms of convenience retailing offers valuable insights into how relational dynamics were embedded in past practices and allows us to assess their relevance for the strategies currently adopted by large food retailers.

Building on this theoretical foundation, the position paper examines three interconnected themes- local embeddedness, restrained consumption, and the role of social ties- which continue to influence modern retail strategies. These themes are explored within the context of evolving consumption patterns, shaped by technological advancements and changing societal expectations. However, it is crucial to critically assess the limitations of the 1950s retail model, which often excluded certain social groups and reinforced existing inequalities. By referencing historical examples, the position paper links past practices with the resurgence of relational retail models, highlighting the ongoing importance of interpersonal connections despite the dominance of digital and algorithmic consumer

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behaviors. A key methodological tool in this analysis is historical photography, which functions as both a visual representation and a cultural artifact. Photography provides valuable insights into the lived experiences of individuals, documenting the social dynamics that influenced their commercial interactions. Several scholars have demonstrated that images, as visual documents, capture moments of organizational life in their natural context, often revealing subtle, informal aspects of human interactions (Strati, 1989; Kunter & Bell, 2006; Ray & Smith, 2012; Shortt & Warren, 2019). This methodology deepens the theoretical analysis by grounding abstract concepts in tangible visual evidence.

While interest in localism, sustainability, and human connection is gaining traction in contemporary retail discourse, much of the existing marketing scholarship continues to prioritize technological innovation or narrowly defined economic metrics. This position paper addresses a critical gap by linking historical retail practices to current debates in marketing theory, consumer culture, and business history. Revisiting the relational retail model of the 1950s, it sheds light on the strategic importance of social bonds in cultivating long-term consumer loyalty. More specifically, it explores how values such as proximity, authenticity, and mutual trust can be effectively integrated with digital technologies to create a customer experience that is not only efficient but also meaningful and ethically responsive. In doing so, the position paper reconceptualizes the role of interpersonal relationships in the modern marketplace, offering a conceptual foundation for future inquiries into the convergence of tradition and innovation. Ultimately, it argues that critically reassessing past retail models can inspire forward-looking strategies aligned with the ethical and environmental expectations of today's consumers.

II. LOCAL ROOTS AS A LEVER FOR RESILIENCE

At a time when the mobility of goods seems (deceptively) unlimited and global supply chains dominate the economic landscape- yet have been increasingly questioned since the Covid-19 pandemic and successive geopolitical crises- the strategic importance of geographical proximity might seem outdated. On the contrary, a growing number of economic and management scholars are emphasizing its central role in the resilience and sustainability of commerce. Localized exchange systems offer valuable lessons on how to design short supply chains capable of adapting to uncertainty, market fragmentation, and ecological pressures. By reducing intermediaries, enhancing flexibility, and fostering relationships based on trust, proximity creates an environment conducive to logistical agility, resilience, and territorial solidarity (León-Bravo *et al.*, 2025). The rising interest in short food circuits, the circular economy, and urban-rural

connections thus reflects a strategic refocusing on controllable, responsive exchange mechanisms (Vergragt *et al.*, 2016). Far from being a spatial constraint, proximity is proving to be a vital resource for managing volatility, particularly in critical sectors such as food trade. It provides a sober, resilient model that offers a credible alternative to globalization that has flourished under neoliberal policies.

a) *How Local Proximity Enhances Supply Chain Flexibility*

Geographical proximity has long been considered a critical factor in successful commerce, as it directly influences the ability of businesses to build trust and respond quickly to consumer needs. As Cliquet (2022) emphasizes, local embeddedness is the foundation of resilient business models, creating closer, more responsive relationships between producers and consumers. This concept is vividly demonstrated by initiatives like the *Association pour le Maintien d'une Agriculture Paysanne* (AMAP) in France, and Community Supported Agriculture (CSA) in Anglo-Saxon countries (Sulistyowati *et al.*, 2023). These models prioritize reducing intermediaries, shortening supply chains, and enabling producers to have direct access to local consumer bases. This proximity facilitates the alignment of supply with local demand, helping to ensure supply security during times of crisis. The localized nature of these systems also makes them less vulnerable to disruptions within global value chains, such as geopolitical crises, climate-related shocks, or economic recessions. Importantly, these models challenge the dominance of mass globalization by offering a more sustainable and efficient alternative. By promoting decentralized networks that focus on local connections, this model demonstrates the enduring relevance of local trade as an asset, even in the face of growing global interdependencies.

Theoretical contributions from Camagni (1991), Krugman (1991), and Storper (1997) further reinforce the strategic importance of localized trade in fostering resilient and adaptive supply chains. Their foundational work in spatial economics emphasizes that geographically proximate networks are better equipped to absorb and respond to disruptions, particularly in sectors such as food, where the perishability of goods heightens vulnerability. Proximity between producers and consumers enables a more agile and responsive system, capable of adjusting swiftly to fluctuations in both demand and supply, thereby maintaining the continuity of goods movement during crises. For instance, localized supply chains diminish dependence on remote suppliers and reduce the logistical complexities associated with long-distance transport. This not only lowers overall transport costs but also significantly reduces the environmental footprint tied to global trade systems. Moreover, locally anchored

systems inherently cultivate stronger communication, mutual trust, and cooperation between stakeholders, resulting in more cohesive and efficient distribution processes (Gajdić *et al.*, 2023). In this context, the resurgence of local trade should not be seen as a nostalgic return to the past, but rather as a forward-looking strategic alternative to the unchecked massification of global supply chains- offering a more resilient, sustainable, and context-sensitive model for navigating an increasingly volatile world.

b) *How Historical Models Inform Modern Local Strategies*

The concept of the short supply chain, which is gaining traction today, can be traced back to the post-WW II era, when local trade was the norm. In the 1950s, many grocery stores, butcher shops, and bakeries sourced their products from nearby farmers, fostering direct relationships with local producers. This system relied on the simplicity of weekly markets, often held in market halls or town squares, where goods reflected the seasonality of the local *terroir*. At the time, the supply chain was characterized by minimal stock, short-distance transport, and close coordination between local producers and consumers (Lyon *et al.*, 2004). This direct exchange was made possible by an intimate understanding of local conditions, such as the climate and seasonal variations in agricultural production. While this model was certainly rudimentary and, as Ramsingh (2014) points out, lacked proper sanitation standards, it was incredibly resilient. The short supply chain thrived without the need for advanced infrastructure or costly logistics networks, instead relying on the adaptability of both producers and consumers. This simplicity and efficiency, driven by proximity and mutual understanding, allowed the system to remain robust even in the face of

challenges. Today, these characteristics are often described as “*agile management*,” a practice that is gaining increasing relevance in contemporary supply chain strategies (for a literature review, see Raji *et al.* [2021]).

To further underscore the resilience of local trade practices, Picture 1 offers a compelling visual representation of the era’s everyday logistics. The image depicts a milkman delivering fresh milk to small neighborhood shops by horse-drawn cart- an iconic and evocative scene that captures the simplicity, regularity, and operational efficiency of short supply chains. Though modest in appearance, this method of delivery played a pivotal role in maintaining consistent procurement, illustrating how localized networks effectively met consumer needs without relying on complex infrastructures or capital-intensive transport systems. The straightforward and human-scaled nature of this process, as illustrated in Picture 1, highlights the practical strength of “proximity logistics” in addressing the very challenges that often plague large-scale supply chains. Viewed in conjunction with the theoretical and historical frameworks discussed earlier, the image reinforces the enduring relevance and adaptive potential of small shops. It demonstrates how these seemingly simple systems, despite operational limitations, laid the groundwork for resilient supply chains and continue to offer valuable strategic insights for contemporary practice. Even in their rudimentary forms, such locally anchored models provide important lessons for modern supply chain management- particularly when navigating the vulnerabilities, complexities, and sustainability issues associated with today’s increasingly globalized and fragile trade environments.



Source: By courtesy of Allan Cash PictureLibrary.

Picture 1: Milk delivery to small food shops (Ireland, 1950)

The vulnerabilities exposed by recent global disruptions- such as geopolitical tensions, climate change, and the COVID-19 pandemic- have prompted a renewed interest in localized trade systems. AMAPs, pick-your-own farms, and local product vending machines are examples of initiatives that seek to adapt the localism of the past to the realities of modern trade (Rouquet & Paché, 2017; Hanan *et al.*, 2024). Large retailers have also embraced hybrid models that integrate micro-locations into urban environments to enhance the responsiveness of their logistical facilities. These practices, while utilizing advanced technologies like real-time traceability and predictive analytics, retain the core principles of the 1950s supply chain model. The goal remains the same: to create short, agile, and resilient supply chains that can adapt to disruptions, minimizing the impact of crises, and ensuring the continuity of supply. Unlike earlier attempts at localism, today's models incorporate cutting-edge technology to enhance efficiency, sustainability, and scalability. This combination of tradition and innovation demonstrates how local trade systems, when adapted to contemporary needs, can offer a strategic response to the challenges posed by an increasingly unpredictable global landscape. Far from simply harking back to the past, these modern initiatives offer an updated blueprint for the future of supply chain management.

III. SOBRIETY AND FRUGALITY: REDISCOVERING LOGISTICS

Sustainable logistics has garnered increasing attention in both academic and practical circles over the past two decades, reflecting the urgent need for more resource-efficient and environmentally conscious supply chains (Morana, 2013; Ren *et al.*, 2020). Central to this movement is the notion of frugality, which emphasizes the optimization of material usage while minimizing environmental degradation and long-term ecological risks. Theoretical models of frugality challenge the patterns of overconsumption and overproduction that have long characterized industrial practices, arguing that such models are fundamentally unsustainable (Fulconis *et al.*, 2019). Instead, the focus shifts toward resource efficiency, advocating material reuse, waste minimization, and more responsible management of procurement flows- including informal, community-based practices that are often overlooked (Lee Park *et al.*, 2022). This framework promotes the idea that companies must not only reduce operational costs but also assume greater social and environmental responsibilities across their value chains. As part of a broader societal transition, businesses are increasingly implementing strategies to lower their carbon footprints, enhance energy efficiency, and integrate circular economy principles into logistics operations. However, frugality extends well beyond cost-cutting measures; it

requires a fundamental rethinking of supply chain design to embed sustainability as a guiding principle, thereby enabling firms to remain resilient, innovative, and adaptive in an increasingly volatile, uncertain, and resource-constrained global environment.

a) *How Frugality Redefines Logistics*

One of the key theoretical contributions of frugality in logistics is its distinction from dominant models like lean, agile, or just-in-time (JIT) logistics. While these systems focus on efficiency, minimizing waste, and enhancing flexibility, frugality introduces an ethical dimension, emphasizing the long-term environmental and societal consequences of supply chain decisions. Unlike JIT, which prioritizes minimizing inventory to reduce costs, frugal logistics promotes small-scale, locally anchored supply networks that reduce delivery distances, limit energy use, and foster community resilience. This conceptual shift challenges the conventional emphasis on rapid production and consumption cycles, instead advocating a more intentional, resource-conscious approach that prioritizes sustainability over short-term profitability. By drawing on traditional logistical wisdom and integrating modern digital tools, frugal logistics presents a model that is not only efficient but also socially and environmentally responsible. The integration of frugality into supply chain practices offers a compelling alternative to dominant paradigms, showing how sustainability and competitive advantage can coexist in today's increasingly constrained world. This reframing is echoed in recent scholarship that highlights the importance of systemic transformation in logistics for achieving environmental goals (Grant *et al.*, 2022).

In the 1950s, long before the term "frugality" was commonly used in modern business discourse, the economic constraints of the time shaped everyday logistics practices. Small shops and markets, operating in environments with limited resources, practiced a form of frugality that was essential to their survival. These businesses relied on local and seasonal products, purchasing small quantities to meet the immediate needs of consumers. As depicted in Picture 2, the physical spaces of these shops were strongly compact in Europe, which prevented overstocking and promoted efficient inventory management. Milk and oil were sold from pumps, and fresh produce was kept in baskets or wooden crates, with no plastic packaging in sight (Raheem, 2013). Such practices were born out of necessity, with a sharp focus on limiting waste, particularly given that refrigeration was not common. The frugal approach, driven by scarcity rather than sustainability concerns, nonetheless demonstrated remarkable logistical efficiency. For historians, this period is seen as a time when supply chains were inherently aligned with consumer demand, exemplifying a key principle of supply chain performance- reducing

waste while meeting immediate needs (De Castro Melo & Chicarelli Alcantara, 2014). The historical model of frugal management offers valuable lessons for

today's efforts to design more sustainable logistics systems.



Source: By courtesy of La Dépêche, March 15, 2020.

Picture 2: Grocery shop in a village (France, 1950s)

b) How Past Practices Shape Future Logistics

As businesses and societies confront the urgent need to reduce their environmental footprints, the frugality of the 1950s extends beyond a mere historical analogy. While many modern logistics systems are driven by sophisticated technologies, the core principles of frugality- resourcefulness, waste minimization, and reliance on local resources- remain profoundly relevant today. The contemporary rise of zero-waste shops, deposit systems for reusable bottles, and bulk-buying sections in supermarkets exemplifies a resurgence of frugal practices in today's context (Beitzen-Heineke *et al.*, 2017; Picuno *et al.*, 2025). These initiatives, when combined with digital tools enabling real-time inventory tracking and predictive analytics, mirror the small-scale, local practices of the 1950s that minimized waste and maximized resource efficiency. By modernizing these concepts through technology, businesses can adapt the frugal logistics model to the complexities of global supply chains, providing consumers and organizations alike with a sustainable alternative to traditional models of consumption. This revival suggests that frugality, far from being a relic of the past, is a viable solution for the future of logistics, particularly as concerns about sustainability and climate change continue to intensify.

Additionally, concepts from degrowth economics and sufficiency-based approaches provide a complementary critique of overproduction and

consumption, aligning with the principles of frugal logistics. These frameworks argue for scaling back production to what is necessary, thereby reducing the ecological footprint and promoting more sustainable lifestyles (D'Alisa *et al.*, 2014; Hickel, 2019). By integrating these ideas into logistics models, companies can move beyond the traditional growth paradigm, embracing sufficiency as a guiding principle. Moreover, consumer education and behavioral change strategies- such as nudges encouraging lower-impact purchasing or promoting unpackaged goods- reinforce the cultural and social dimensions of frugal logistics. In this way, logistics systems are not only about optimizing supply chains but also about shaping societal behaviors toward more sustainable practices (Syed *et al.*, 2024). This cultural shift, when coupled with the efficiency gains from digital tools, creates a holistic approach to logistics that fosters sustainability at every level of the value chain. By incorporating these broader ideas, frugal logistics evolves into a strategic model that balances efficiency, sustainability, and social responsibility, ensuring long-term viability for both businesses and the environment.

IV. TRUST, FAMILIARITY AND SOCIAL TIES

As McNeil (1980) and Granovetter (1985) have shown, economic exchanges are embedded in social structures, shaped by interpersonal ties, cultural norms,

and historical contexts. This embeddedness was particularly visible in the food trade of the 1950s, which was not merely an economic transaction but a deeply social practice, where trust, familiarity, and reciprocity played vital roles. Bourdieu's (1986) notion of social capital- networks of relationships and the recognition they generate- offers a useful lens to understand these dynamics. His broader typology of capital, encompassing economic, cultural, and social forms, frames the role of local shopkeepers as mediators of embedded exchange. Positioned at the heart of neighborhood life, these shopkeepers were attuned to local rhythms, able to anticipate needs, nurture relationships, and often extend informal credit. Such practices fostered bonds grounded in mutual respect, recognition, and community obligation (Chabault, 2024). The local shop was not only a commercial space but a "social hub" where symbolic capital was accumulated and circulated. Trust emerged not only through repeated transactions but through the shopkeeper's active role in sustaining community cohesion. In this sense, commerce reinforced social solidarity, producing a resilient form of local exchange. Far from being peripheral, these ties were central to the functioning of everyday economic life.

A key representation of this dynamic can be seen in Figure 3, which shows a child purchasing goods from a small shop in the Netherlands in 1953. This image is more than just a historical moment; it symbolizes the trust inherent in local commerce at the time. The safety with which children were allowed to make purchases alone illustrates the level of community trust built through consistent and daily interactions. In this environment, the shopkeeper was not just a vendor; they were an integral part of the community, someone whose presence was trusted by all members of the community, including the younger generation. Picture 3 highlights a deeper societal function of local stores, where the security of the environment transcended the immediate transaction and reflected the personal relationships built over time. It is a visual testament to how trust, rooted in the familiarity and recognition between customers and shopkeepers, was integral to the commercial ecosystem of the era. Beyond the physical act of purchasing, these stores were spaces of social interaction, reinforcing communal bonds and creating a sense of belonging, central to the "production of the neighborhood."



Source: By courtesy of Pinterest.

Picture 3: Fully secure children's area (The Netherlands, 1953)

a) How Local Retail Restores Trust

In contrast, today's digital retail environment has introduced new forms of trust mechanisms that,

while innovative, often fail to replicate the depth of personal connection characteristic of face-to-face interactions. Online platforms depend on user ratings,

reputation systems, and customer reviews to establish trust and mitigate misinformation and deception (Beck *et al.*, 2024). Although these mechanisms provide valuable feedback and influence consumer decision-making, they fall short of fostering the deeper, more personal relationships once common in traditional retail settings. Digital trust is inherently more transactional- anchored in algorithms and depersonalized evaluations- whereas trust in local retail environments developed organically over time through direct and repeated human interactions. As consultants such as LaGore *et al.* (2023) observe, platform-based systems, though effective in guiding customer choices, lack the social intimacy afforded by physical proximity and personal recognition. In the digital age, customer loyalty is increasingly shaped by impersonal metrics, in contrast to the 1950s retail model, which relied heavily on the human touch. The absence of personalized service and community-based engagement on digital platforms underscores their limitations, reaffirming that human relationships remain central to cultivating and sustaining trust- even in an increasingly digitized marketplace.

Modern businesses, however, are increasingly integrating both traditional relational approaches and innovative digital solutions. Hybrid retail models, such as community-owned grocery stores, co-ops, and “social supermarkets,” are reinterpreting the relational logic that flourished in the 1950s. These businesses combine the strengths of both worlds: they preserve close-knit community relationships while leveraging modern technology to enhance efficiency and personalize customer experiences. For instance, these models often involve customers in business decisions, such as voting on product selections or participating in store operations. This participatory approach fosters a stronger sense of ownership and trust, positioning social capital at the core of the business model. Community-owned grocery stores, co-ops, and social supermarkets underscore the continued relevance of social ties in contemporary commerce, offering a compelling alternative to purely transactional or digital models (Cambra González, 2025). They serve as modern-day equivalents of the neighborhood shops of the past, fulfilling similar roles by cultivating a sense of belonging and ownership. These businesses are becoming social hubs in a way reminiscent of the 1950s, demonstrating how a blend of community engagement and digital tools can create sustainable, relational retail environments that meet modern demands while preserving the social capital central to earlier models.

b) *How Hybrid Models Reinvent Community*

The relevance of relational spaces can also be understood through the lens of urban sociology, particularly Oldenburg's (2023 [1989]) concept of “third places.” These informal public spaces, located outside the realms of home and workplace, serve as vital hubs

where individuals gather, socialize, and build meaningful connections. Community-oriented shops- such as independent grocers, cooperative markets, and local cafés- can be viewed as contemporary manifestations of third places, where people not only make purchases but also engage in face-to-face interactions with others in their community. From this perspective, such retail environments offer more than commodities; they function as venues for social engagement, civic participation, and emotional support, fostering a strong sense of place and belonging. Just as third places have long been integral to creating vibrant, cohesive neighborhoods, modern hybrid retail models are reclaiming this social role. By blending traditional retail elements with modern conveniences- such as digital ordering and flexible service options- these models promote interaction, support local economies, and reinforce the social fabric. In doing so, they highlight the enduring significance of relational ties in the retail sector, demonstrating how businesses can thrive by aligning with the evolving social and emotional needs of their customers, even within an increasingly digitized commercial landscape (Zukin *et al.*, 2015).

In short, trust, familiarity, and social ties are crucial components in the contemporary retail sector, particularly for food-focused businesses (Badot & Filser, 2007). In the past, the focus was predominantly on product acquisition; today, consumer expectations extend beyond the transaction to a broader experience. For small food shops to thrive, they must create an environment where customers feel valued and understood. This shift in focus is supported by techniques like customer relationship management (CRM), which help businesses gain deeper insights into customer preferences, allowing for tailored offerings and enhanced service quality. As Solomon & Russell (2024) argue, despite the growing role of technology in retail, true consumer loyalty is anchored in authentic human interactions. The importance of personalized service, attentive listening to individual needs, and a focus on exceptional customer care cannot be fully replicated by algorithms or automated systems. These elements remain at the heart of fostering lasting connections, ensuring that even as businesses embrace digital advancements, the relational foundations of customer loyalty continue to play a pivotal role in long-term growth and success.

In an ever-evolving competitive environment, the quality of human contact alone is no longer sufficient to ensure strong sales performance. Today's multiple retailers like Marcel & Fils in France must be strategically agile, incorporating innovations that transform proximity into a key driver of sustainable differentiation. For instance, some chains are exploring the potential of AI to adjust their assortments in real-time based on local shopping habits, optimizing their offerings to reflect micro-spatial preferences. Large retailers like Lidl and



Leclerc are strengthening partnerships with regional producers to promote short supply chains, enhance transparency, and deepen their connections with local communities. Simultaneously, some large retailers are reimagining the concept of service by creating hybrid spaces that blend retail and community areas, where workshops, tastings, cultural activities, and festive events enrich the consumer experience (Antéblan *et al.*, 2013; Hagtvedt & Chandukala, 2023). These developments signal the emergence of a new commercial framework where social ties are not eliminated, but rather redefined at the intersection of digital, local, and experiential. Far from pitting tradition against modernity, the most innovative players blend the two to forge new forms of loyalty grounded in “augmented proximity.”

V. CONCLUSION

This position paper explored the strategic value of social connections in the food retail sector, drawing from the relational practices of 1950s small shops to understand how these might inspire new consumer experiences in a radically different context. The central question examined how the relational practices of small shops, founded on proximity, authenticity, and loyalty, could be adapted to the modern era to meet evolving consumer expectations. While historical models emphasized direct, human interactions within localized spaces, their revival today is not about replicating past models but about integrating contemporary technologies that complement and enhance these relational practices. The challenge lies in blending digital innovation with the human elements of connection, thus fostering consumer experience that is both personalized and sustainable. This hybrid approach is essential in a time when consumers are more conscientious about societal and environmental issues. By adopting this model, large food retailers can offer a unique value proposition that resonates with modern ethical concerns, such as sustainability, local sourcing, and transparency. Ultimately, the future of food retail lies in creating meaningful, socially responsible connections, combining tradition with innovation to meet the expectations of a more conscious and demanding market.

Adapting relational practices from the 1950s is not simply a matter of nostalgia. While societal shifts such as globalization, digitalization, and environmental crises have transformed consumer behavior, the underlying values of trust, proximity, and personal relationships remain vital in today's retail landscape. Giuseppe Tomasi di Lampedusa's famous line, “*Everything must change for everything to remain the same,*” captures the paradox of continuity and change. For modern large retailers, this means understanding that while the past provides important lessons, these must be reframed in the context of current technological

and societal realities. The rise of e-commerce, for instance, has radically altered how consumers interact with businesses, while also heightening demands for digital transparency and efficiency. Thus, it is not about returning to a bygone era but creating hybrid models that incorporate both relational heritage and digital solutions. Large retailers must find innovative ways to build trust and engagement, particularly with younger, more tech-savvy consumers who expect seamless integration between physical and digital experiences. Striking this balance will be critical in ensuring that modern food retail businesses remain competitive and relevant in a rapidly changing market.

Looking ahead, research must explore how digital platforms can cultivate authentic consumer relationships. Emerging technologies like AI, blockchain, and data analytics offer new ways to enhance personalization and trust, creating more meaningful connections between large retailers and customers. For instance, AI can help companies better understand consumer behavior and preferences, while blockchain can ensure product traceability and transparency. However, these technologies must be used in a way that complements, rather than replaces, human interactions. Future research should investigate how these tools can be integrated into a hybrid retail model that combines relational heritage with modern technological solutions. Additionally, measuring relational value will be essential for assessing the effectiveness of these models. Metrics such as customer retention, community engagement, and social impact will help determine how successfully businesses are fostering long-term loyalty and connection. Research should also consider how consumers' perceptions of proximity and community are changing in the digital age, as virtual spaces continue to play an increasingly significant role in shaping social bonds. Understanding how technology can enhance, rather than disrupt, these relationships will be crucial in ensuring that food retail businesses meet the evolving expectations of their customers.

In conclusion, the future of food retailing depends on successfully combining relational heritage with modern technological tools. By blending tradition with innovation, retailers can offer consumers a personalized, authentic experience that also meets the growing demand for sustainability and ethical business practices. This hybrid approach allows businesses to leverage digital tools to improve efficiency and scalability while maintaining the core values of human connection and community. For businesses, this means creating a retail environment where consumers feel valued, and engaged, not just as buyers, but as active participants in a larger social framework. Moving forward, the challenge will be to find ways to integrate these relational values with the rapidly advancing digital landscape. Retailers must also consider how to measure the success of their relational approaches,

ensuring that these models not only create value for customers but also foster long-term loyalty and engagement. With a continued focus on both the human and technological aspects of the retail experience, food retailers can navigate the complex demands of today's market while building meaningful, enduring connections with their customers.

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The Effect of Electronic Human Resource Management Systems on Sustainable Competitive Advantages the Roles of Sustainable Innovation and Organizational Commitment

By Sheriff Y. Ahmed

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Abstract- This study endeavors to examine the impact of electronic human resources management (E-HRM) systems on achieving a sustainable competitive advantage (SCA) in the health sector in Riyadh and Eastern region in Saudi Arabia by combine sustainable innovation (SI) and organization commitment (OC). The research was applied in health units that rely on E-HRM in their work, such as: electronic recruitment and online training. Structured questionnaires were used to collect data from respondents. Overall, 575 questionnaires were distributed and received 468, response rate 81.4%. The research data was analyzed using Amos- SEM. Research result: E-HRM have a positive and significant effect on SCA, SI, and OC, SI and OC they have a positive and significant effect on SCA. SI and OC are able to mediate the influence of E-HRM on SCA. The study adds to existing literature on who E-HRM impacts SI, OC and SCA. The current study has addressed gaps by empirically analyzing these relationships in the context of Kingdom of Saudi Arabia health sector. It integrates E-HRM, innovation, OC and competitive advantage within the context of sustainability in health sector.

Keywords: *electronic human resources management, sustainable competitive advantage.*

GJMBR-A Classification: *JEL Code: M15*



Strictly as per the compliance and regulations of:



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I. INTRODUCTION

The Saudi Vision 2030 aimed to expansion in economic fields other than oil by boosting the diversification of economic. The service sector has succumbed significant transformation to attract the investors (Parveen & Alraddadi, 2024). The medical sector is considered one of the sectors that received attention from Vision 2030 for reduction of Saudis` dependence on abroad for many medical service.

The impact of applying information technology and its innovative solutions on all activities and tasks of organizations has led to changing the ways of performing these activities and tasks, among the areas in which information technology has been applied is HRM, the application of information technology in performing activities and tasks of HRM has led to emergence of a new concept, which is e-HRM (Berber & etal, 2018). Organizations that used e-HRM were able to achieve their goals by retaining competencies employees, supporting strategic decisions, and a

achieving sustainable superiority, e-HRM also enabled organizations to enhance organizational effectiveness through developing human resources policies (Shamout & et al, 2022).

II. LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESIS

a) *The relationship between E-HRM and SCA*

The define of e-HRM as "a way of implementing HRM strategies, policies and practices in organizations through conscious and directed support and with the full use of web technologies" joint HR activities. HR related to handling HR data involve several processes such as recruitment, selection induction, training and development, fostering employee interaction, performance appraisal, and others (Syarief, etal, 2022). Findikli & Rofanin (2016) believe that e-HRM is integration of computers in work life a long with the rapid changes in internet technologies influenced HRM. According to Ahmed (2019) e-HRM practices can reduce workload, reduce waste of time and ensure proper human resource management practices. E-HRM is mediated by information technologies to help the organizations to acquire, develop, and deploy intellectual capital (Shah, etal, 2020), Omran and Anan (2018) indicated that the shift to e-HRM is expected to lead to simplify a more efficient and strategic way of working for HR professionals, automation of HR tasks and practices means transforming traditional HR tools, labor- intensive HR tasks into effective and fast responsive activities that will help organizations to anticipate environmental transformations and benefit from them to create a competitive advantage.

SCA are organizational strengths unique to organization, these are the strengths that set a part from competition, it`s what do well and is distinctly valuable in market (Ahmed, 2019), in another study conducted by Nanath and Pillai (2017) they indicated that SCA are a set of assets, characteristics, or capabilities that allow an organization to meet its customer needs better than competition can. Azeem et al (2021) indicate that SCA is the ability to deal with competitors effectively, and this is done through the organization adding value that

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competitors can't imitate. Competitive advantage must be commensurate with the organization's capabilities and resources (Obeidat et al, 2021).

Almasharfi (2020) showed that use e- HRM directs organizations to reduce organizational cost and effective communication between manager and employees. Bondarouk, et al (2017) conducted that e- HRM contemporary e- HRM technologies contain powerful functionality that can support organization in attaining SCA in reducing the cost and improving the quality of HR service delivery, as well as enabling higher productivity and providing strategic capability. This study proposes the following hypothesis.

Hypothesis 1: Electronic human resource management positively affects sustainable competitive advantage.

b) Relationship between E-HRM and SI

Innovation is the management of all actions related to the process of creating a business, developing technology, manufacturing and marketing a new product or equipment, its` the key to winning of competition (Samuel, Sigina & Octavia, 2017). Adomako and Nguyen (2020) indicated that SI is a process of change that occurs in a organizations to maintain a current position through improve the quality of products or services offered, continuous innovation is one way of organizations to continue to improve customer satisfaction by offering better products or service and to compete and increase their competitive advantage. SI is the source of competitive advantage by reducing production costs through increasing efficiency of the production process (Seeck & Diech, 2017). The pivotal role of organizational innovation is to preserve the effectiveness of an organization in achieving long term success to overcome unrest in the external environment (Sabiou, et al, 2016).

Implementing e-HRM could help firms grow and increase the quality of service (Iqbal, et al, 2018). E- HRM can boost organizational innovation by improving HR processes and encouraging employee cooperation (Jansen, et al, 2013). From here, the following hypothesis is proposes:

Hypothesis 2: Electronic human resource management positively affects sustainable innovation.

c) Relationship between SI and SCA

Ketata, et al (2015), Nanath & Pillai (2017), Achmad, et al (2024) indicated that SI serves as essential driver of unique for organizations, through innovative proffer and sustainable products, services, or processes, organizations can characterize them selves in the market and provide distinctive value propositions to customers, the enhance differentiation foster increased customer loyalty, market share, and pricing power, which may lead to a sustainable competitive advantage. Companies with an innovative nature are

accustomed to developing efficient and effective systems to play their role in predicting investment opportunities and using these systems to develop the organization's work and address organizational problems (Gualandris & Kalchmidt, 2014). SI has a strong and important relationship to SCA (Shen et al, 2020). Accordingly, the below hypothesis is proposes:

Hypothesis 3: Sustainable innovation positively impact sustainable competitive advantage.

d) Relationship between e-HRM and OC

Organization commitment refers to the willingness of organization members to make efforts for the organization and achieve its goals, OC is important for both individuals and organizations (Dursun, 2015). Organization commitment has been extensively study and analyzed to improve organizational performance based on organizational commitment of members from the point of view of organizational behavior (Ha & Lee, 2022).

Different international studies show e-HRM practices influencing organizational commitment (Whitener, 2001; Chew & Chan, 2007; Wright & Kehoe, 2008; Ordaz et al, 2001; Coetzee et al, 2014; Al. Adresi & Darun, 2017). Hence, the hypothesis is formulated as follows:

Hypothesis 4: Electronic human resource management positively impact organization commitment.

e) Relationship between OC and SCA

OC is an individual's passion for what he does, through which he feels secure and ready to prepare himself for it in order to contributing to the success of the organization (Jun & Jun, 2022). OC has recently found interest in the field of management due to its impact on the effectiveness of the organization and the effort made by the individual in the workplace, which in turn is reflected in the strength of the organization and helps it to remain in the circle of competition with other organizations (Alserhan & Alshbail, 2020). Based on the above, the following hypothesis is formulated:

Hypothesis 5: Organization commitment positively impact sustainable competitive advantage.

f) The Mediating Role of SI in the Relationship between E-HRM and SCA

Implementing e- HRM could help firms grow and increase the quality of service (Iqbal & et al, 2018). E- HRM contributes to providing an appropriate environment to improve innovation in organizations by providing a collaborative platform that helps generate ideas and implement them, which helps in taking measures that will lead to SCA (Parveen & Alraddadi, 2024). SI encourages differentiation between organizations and helps create loyalty among customers, which leads to increased SCA (Aminudin & et al, 2024). Therefore, hypothesis is formulated as follows:

Hypothesis 6: The mediating role of sustainable innovation in the relationship between electronic human resource management and sustainable advantage.

g) *The Mediating role of OC in the Relationship between E-HRM and SCA:*

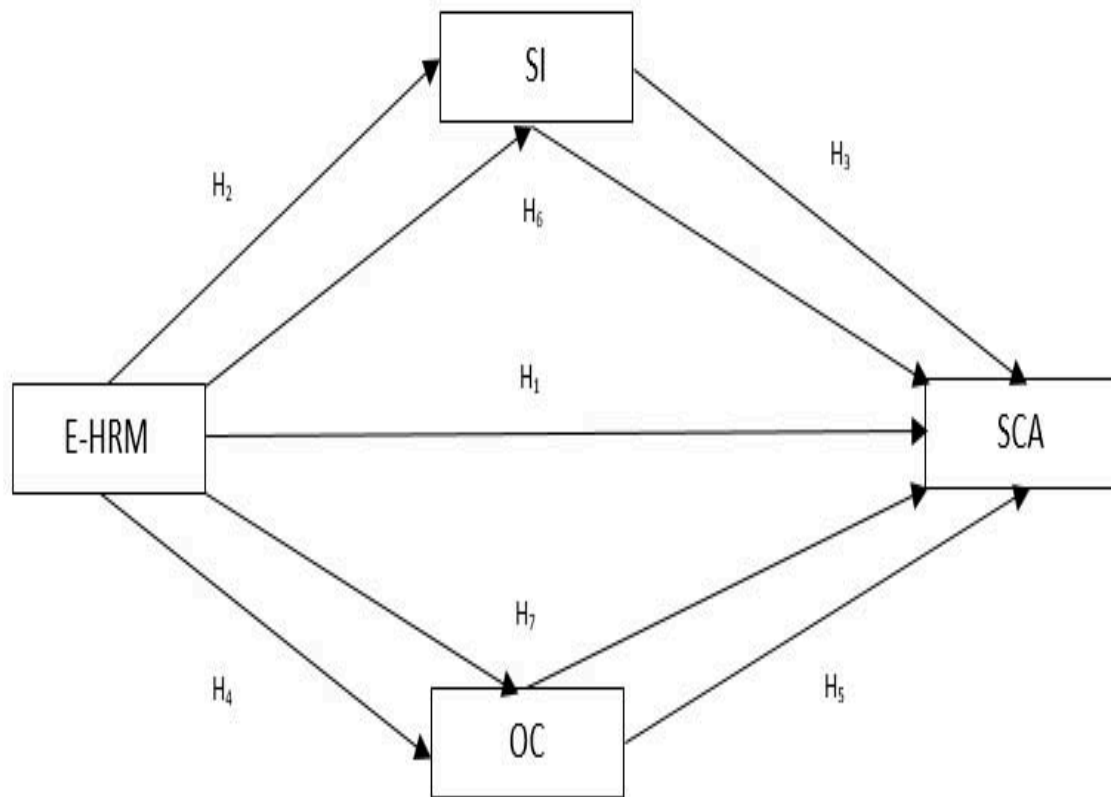
Capacity development ensures employee commitment, that will foster the company's performance, a common trend in previous studies indicated that e-HRM impact positively on the company's performance through OC, and that further lead to a competitive advantage for the company (Alqarni & etal, 2023). Accordingly, the following hypothesis is formulated:

Hypothesis 7: Organization commitment a mediating role in the relationship between electronic human resource management and sustainable advantage.

III. THE RESEARCH MODEL

Figure 1 indicates the theoretical framework of the relationships between the study variables. The theoretical framework proposes the electronic human resource management (E-HRM) system are indicators of sustainable competitive (SCA), through sustainable innovation (SI) and organization commitment (OC).

The model contends that these E-HRM system are indicators of SCA through SI and OC. The model also proposes that SI and OC mediates the effect of E-HRM on SCA. That is E-HRM, SI and OC have a direct and indirect effect on SCA. As represented in the theoretical framework, the data were gathered from the staff of private hospital in Riyadh and Eastern province in Saudi Arabia.



Source: prepared by author (2025)

Figure 1: Research Model

IV. METHODOLOGY

a) *Questionnaire Design and Study Measures*

A quantitative approach is employed to gather required data from the employees of private medical sector in Riyadh and Eastern province in Saudi Arabia. A survey was used to evaluate the E-HRM system and its impact on SCA, SI and OC. The survey is divided into two parts. In the first part is employee profiles, including gender, age, education level, job experience and

occupation. In the second part investigated concepts of study, all items were evaluated using a five – point Likert scale.

The first variable "the E-HRM system" is measured using 6 items, scale created by Nyathi and Kekwaletswe (2022). There are, 1) I have the necessary knowledge to use the e-HRM system. 2) Use of e-HRM application does not require a lot of mental effort. 3) The e-HRM system is clear and understandable. 4) The e-HRM system helps me improve my job performance. 5) I

find the e-HRM system useful for performance my day-to-day job- related activities at lower costs. 6) E-HRM allows employees to perform job- related activities faster. The second variable "sustainable competitive advantage" was assessed by a 4 items scale adapted from Hossain et al (2021). There are, 1) This hospital offers comparatively lower prices than competitors. 2) This hospital offers high- quality product / service to the customer. 3) This hospital responds well to customer demand for new features. 4) This hospital has a time-to-market lower than the industry average. The third variable is "sustainable innovation" is measured using 6 items scale adapted from Delmas and Pekovic (2018). Therefore, 1) We have introduced products, processes, and organizational, or marketing innovations that reduce resources and materials per unit of production. 2) We have introduced products, processes, and organizational, or marketing innovations that reduce energy use. 3) We have introduced products, processes, and organizational, or marketing innovations that reduce carbon dioxide production. 4) We have introduced products, processes, and organizational, or marketing innovations that replace materials with less polluting or hazardous substitutes. 5) We have introduced products, processes, and organizational, or marketing innovations that reduce soil, water, noise, or air pollution. 6) We have introduced products, processes, and organizational, or marketing innovations to recycle waste, water, or materials. On the other hand, the fourth variable "organization commitment" was evaluated by 4 items scale created by Allen & Meyer (1990), there are, 1) My company has a great deal of personal meaning for me. 2) I really feel as if my company`s problems are my own. 3) I do feel like "part of the family" at my company. 4) I would be very happy to spend the rest of my career with my company.

b) *Sample and Data Collection Procedures*

The research population consists of all workers from the private medical sector in Riyadh and Eastern Region in Kingdom of Saudi Arabia. The private medical sector was chosen for its great role in achieving vision 2030, also this sector is keen to espouse a diversity of E-HRM systems to improve their operations and a achieve a SVA while keeping the global need for sustainability in mind. The suitability sample approach was adapted for this research, because it is widely employed when randomization is impractical due to a large population and limited resources. A total of (575) questionnaires were sent to the firms under study in Riyadh and Eastern Region in Kingdom of Saudi Arabia after making communication with management of the firms to request approval to visit and disseminate the questionnaire on their property. Only (468) valid from were obtained with response rate (81.4%).

c) *Data Analysis*

In this research employed SPSS-Amos technique for data analysis to assess the measurement and structural model, as well as test research hypotheses. This technique is considered appropriate tool for assess complex structural models that link several variables via both direct and indirect pathways. The operational framework of the research was evaluated through structural equation modeling (SEM), while the importance of mediating effects was assessed bootstrapping (Hayes, 2002).

V. RESULTS

a) *Participant Profiles*

Table 1 show that the sample of respondents consists of 468 participants, there were 261 (55.8%) male and 207 (44.2%) female. A total of 58 (12.4%) respondents were under the ages of 30, 124 (26.5%) were between the ages of 30 and 40, while 151 (32.3%) there ages between 40 and 50, as well 135 (28.8%) there ages greater than 50 years. Furthermore, 183 (39.1%) had a bachelor`s degree, and the majority 271 (57.9%) had master/ PhD degree. Also, 33 participants (7%) had practical experience less than 5 years, 95 (20.4%) between 5 and 10 years, and 340 (72.6%) there work experience 10 years and more. In addition, 405 (86.5%) they work in medical professions.

b) *Reliability and Validity*

The confirmatory factor analysis has been implemented in table 2. It presents composite reliability (CR) results of each latent variable which is above 0.60 accepted thresholds (Lawrence & Kingsley, 2018). The computed item loading varied between 0.582 and 0.998, factor loading values greater than 0.5 were considered accepted, in line with Hair et al (2010). Table 2 also shows that Cronbach`s alpha (CA) and average variance extracted (AVE) values are more than 0.5 for all variables, this indicated a good reliability. Additionally, computed the variance inflation factor (VIF) for each latent in model, indicating that it is free of common method bias since the VIF values are ≤ 3.3 (Kock, 2015).

Table 1: Participants Profiles (N= 468)

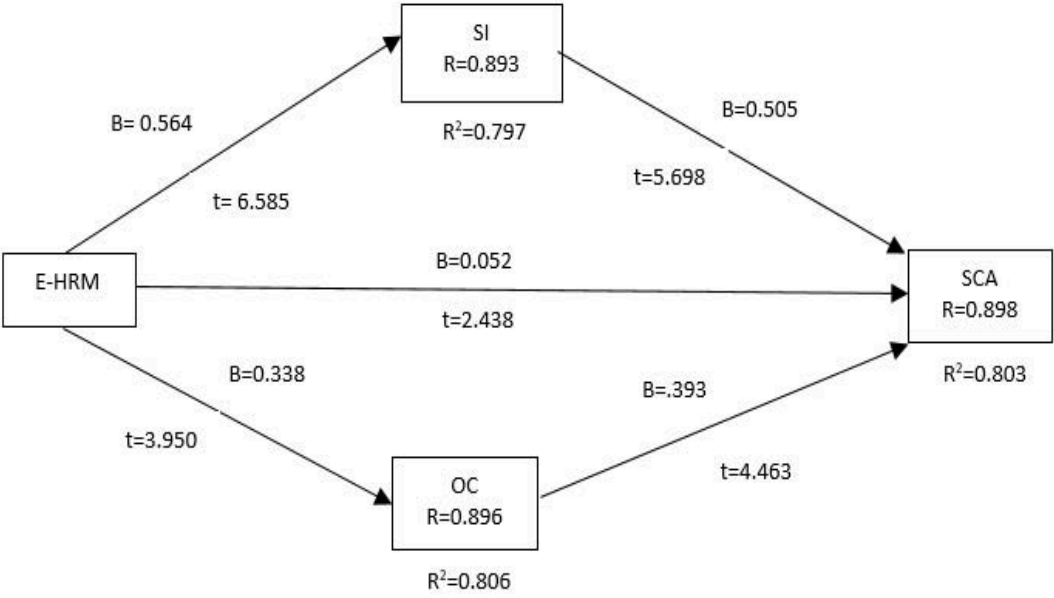
		Frequency	Percent
Gender	Male	261	55.8
	Female	207	44.2
Age	< 30 years	58	12.4
	30 < 40 years	124	26.5
	40 < 50 years	151	32.3
	≥ 50 years	135	28.8
Education	High school / institute	14	3
	Bachelor	183	39.1
	Master`s / PhD	271	57.9
Experience	< 5 years	33	7
	5 < 10 years	95	20.4
	≥ 10 years	340	72.6
Occupation	Medical	405	86.5
	Non- medical	63	13.5

Source: prepared by the author (2025)

Table 2: Validity and Reliability for Constructs

Variable	Indicator	Factor Loadings	VIF	AVE	CR	CA
Electronic Human Resources Management(E-HRM)	E- HRM1	0.861	1.350	0.858	0.973	0.796
	E-HRM2	0.720	1.733			
	E-HRM3	0.996	1.573			
	E-HRM4	0.998	1.532			
	E-HRM5	0.989	1.700			
	E-HRM6	0.958	1.375			
Sustainable Competitive Advantages (SCA)	SCA1	0.610	1.463	0.732	0.751	0.708
	SCA2	0.674	1.887			
	SCA3	0.749	1.761			
	SCA4	0.582	1.355			
Sustainable Innovation (SI)	SI1	0.996	1.219	0.980	0.997	0.751
	SI2	0.998	1.530			
	SI3	0.996	1.689			
	SI4	0.998	1.369			
	SI5	0.989	1.746			
	SI6	0.958	1.648			
Organizational Commitments (OC)	OC1	.996	1.921	0.972	0.993	0.841
	OC2	0.998	1.953			
	OC3	0.989	1.968			
	OC4	0.958	1.936			

Note: VIF= variance inflation factor; AVE= average variance extracted; CR= composite reliability; CA= Cronbach`s alpha



Source: prepared by the author (2025)

Figure 2: Final Model of the Study

Table 3: Hypothesis Testing

Hypothesis	Interaction	Beta	t-value	Decision
H1	E-HRM → SCA	0.052	2.438	Supported
H2	E-HRM → SI	0.564	6.585	Supported
H3	SI → SCA	0.505	5.698	Supported
H4	E-HRM → OC	0.338	3.950	Supported
H5	OC → SCA	0.393	4.463	Supported
H6	E-HRM → SI → SCA	0.285	6.142	Supported
H7	E-HRM → OC → SCA	0.133	4.207	Supported

Source: prepared by the author (2025)

c) Testing of Hypothesis

The hypothesis testing findings (figure 2) disclose that E-HRM have direct and positive impact on SCA ($\beta = 0.052$, $t = 2.4308$). Thus, hypothesis 1 was acceptable. The results determine that E-HRM have positive influence on SI ($\beta = 0.564$, $t = 6.585$) and OC ($\beta = 0.338$, $t = 3.950$). Therefore, hypothesis 2 and 4 were both supported. Furthermore, SI and OC are both

have a direct and positive impact on SCA ($\beta = 0.505$, $t = 5.698$), ($\beta = 0.393$, $t = 4.463$). Thus, hypothesis 3 and 5 was supported. In addition, figure 2 displays the E-HRM explains 80% of the variance in SI ($R^2 = 0.797$) and 81% of the variance of OC ($R^2 = 0.806$). Furthermore, E-HRM, SI, and OC explains 81% of the variance pin SCA ($R = 0.803$).

Table 4: Mediation Analysis

Hypothesis	Direct effect		Indirect effect	SE	t- value	LL	UL	Decision
	Path 1	Path 2						
E-RM→SI→SCA	0.564	0.505	0.285	0.069	6.585	0.103	0.450	supported
E-HRM→OC→SCA	0.338	0.393	0.133	0.072	5.698	0.072	0.609	

Source: prepared by the author (2025)

Table 3 show the testing of the mediating effect of SI and OC. For the SI mediating effect, the indirect effect's $\beta = 0.285$, $t = 6.585$, the 95% bootstrapped confidence interval lower limited 0.103 and upper limited 0.450. Furthermore, the author found mediating effects of SI in the relationship between E-HRM and SCA. Also, the finding indicate a partial mediating relationship for E-

HRM → OC→ SCA ($\beta= 0.133$, $t = 5.698$) the lower limited 0.072 and upper limited 0.609.

VI. DISCUSSION

The aim of this research is to investigate how E-HRM, SI, and OC serve as indicators of SCA. It also examines the mediating roles of SI and OC in the impact

of E-HRM on SCA. Data were collected from workers in the private health sector in Riyadh and the Eastern Region of the Kingdom of Saudi Arabia to examine this relationship. The study found that E-HRM affects SCA, SI, and OC. This result is compatible with other studies (Shamout et al., 2022; Alqarni et al., 2023, 2024; Aminudin et al., 2024; Parveen & Al Raddadi, 2024; Najm, 2024), which emphasize the crucial role of E-HRM in healthcare management.

The health sector, like every other business sector, faces challenges in a dynamic and complex competitive business environment (Hamadamin & Atan, 2019). The application of E-HRM has several benefits, such as reducing costs, improving quality, speeding up processes, and carrying out HRM tasks efficiently. Additionally, E-HRM influences SCA (Shah et al., 2022). E-HRM contributes to the effectiveness of human resource practices and promotes increased value for human resources, which has a positive impact on SCA (Shamout et al., 2022; Najm, 2024). Findings from the study indicate that E-HRM positively influences SI. E-HRM has the ability to integrate the organization's capabilities, providing employees with analytical and creative thinking skills to enhance innovation. This makes the organization more flexible and open to adopting modern ideas for development and sustainability. This result aligns with previous studies (Aminudin et al., 2024; Parveen & Al Raddadi, 2024; Alqarni et al., 2023), which found similar results indicating that SI is influenced by E-HRM. Therefore, this study suggests that the private health sector in Riyadh and the Eastern Region must place greater value on E-HRM to enhance SI by enabling employees to develop their capabilities. This, in turn, reduces production costs and minimizes material waste.

E-HRM is found to have a direct and positive impact on OC in the private health sector. The adoption of E-HRM in health organizations fosters high employee commitment and enhances their creative and professional capabilities through continuous education and training. It improves their scientific and practical knowledge and increases their decision-making capabilities by providing necessary information. E-HRM also helps health organizations adopt a strategic approach that aligns organizational goals with employees' goals, thereby enhancing commitment to the organization. This result is consistent with previous studies (Hamadamin & Atan, 2019; Alserhan & Alshbail, 2020; Ozan et al., 2021), which found that effective E-HRM enhances employee OC. Employees with strong OC perceive themselves as integral to the organization, which boosts morale and commitment.

The direct impact of both SI and OC on SCA was evaluated. The findings indicate that both variables have a significant and positive impact on SCA. Aminudin et al. (2024) concluded that organizations can distinguish themselves from competitors through SI by

providing innovative products, meeting market needs, and fulfilling customer expectations, thereby creating SCA. Thi et al. (2023) asserted that SI is a key factor in improving and enhancing an organization's competitive advantages through forecasting opportunities and challenges. SI contributes to SCA by optimizing resource utilization, improving technical processes, and reducing costs (Alqarni et al., 2023). The findings also confirm previous studies emphasizing the importance of OC in SCA. Ozan et al. (2021) found a strong relationship between OC and organizational performance. In highly competitive sectors such as healthcare, quality and customer satisfaction are crucial. Highly committed employees play a major role in SCA. Alserhan & Alshbail (2020) and Hamadamin & Atan (2019) highlighted that employees with OC contribute significantly to SCA, requiring HR management strategies that enhance employee OC.

In this study, two mediating factors were selected to measure the indirect effect of E-HRM on SCA (E-HRM → SI → SCA, and E-HRM → OC → SCA). E-HRM activities include recruiting, training, and developing employee capabilities via the internet (Alqarni et al., 2023; Aminudin et al., 2024; Parveen & Alraddadi, 2024). The retention of competent employees reflects on their morale, commitment to the organization, and teamwork in strategy development and implementation, leading to high performance and improved market positioning, ultimately achieving SCA (Alserhan & Alshbail, 2020). The study highlights the importance of innovation as a mediator between E-HRM and SCA in private-sector medical organizations in Riyadh and the Eastern Region. The results emphasize the need for organizations to foster a culture of innovation among employees to distinguish themselves from competitors. Additionally, OC mediates the relationship between E-HRM and SCA by ensuring organizations focus on employee development, digital HR strategies, and skill enhancement through HR processes.

VII. CONCLUSIONS

This study aimed to investigate how E-HRM systems affect SCA. The roles of SI and OC as mediating factors were also considered. The private health sector in Riyadh and the Eastern Region was examined at the level of medical and administrative staff using the AMOS-SEM approach. The results revealed that E-HRM positively affects SCA, SI, and OC. Additionally, a positive correlation between SI and OC with SCA was identified. The study also found that SI and OC act as mediators in the relationship between E-HRM and SCA. This research contributes to the existing literature on E-HRM and its impact on SCA, SI, and OC.

VIII. THEORETICAL IMPLICATIONS

The theory of dynamic capabilities explains how the ability to form, renew, and restructure organizational resources to meet competitive market demands enhances an organization's adaptability to environmental changes. This adaptability is a key factor in achieving competitive advantage. This study examines how E-HRM influences SCA through the roles of SI and OC. It emphasizes the unique capabilities and mechanisms through which E-HRM practices enhance SI and OC to achieve SCA. From a theoretical standpoint, this study contributes to research by highlighting the specific roles of E-HRM practices in proactively developing employee competencies and capabilities to benefit the organization.

IX. MANAGEMENT IMPLICATIONS

This study clarifies the significant effects of E-HRM on SCA in private healthcare organizations in Riyadh and the Eastern Region. It also explores the mediating roles of SI and OC in this relationship. The study has many practical implications, emphasizing the role of digital technology in HR operations. To succeed in the medical sector, healthcare organizations must adopt digital transformation to enhance efficiency, effectiveness, and decision-making in HR processes. This leads to improved organizational performance and SCA. The study also highlights the importance of SI as a mediator between E-HRM and SCA in private healthcare organizations. Organizations must cultivate a culture of innovation among employees to generate ideas that seize opportunities and enhance collaboration, thereby distinguishing the organization from competitors.

The study also examines OC's role in the relationship between E-HRM and SCA in private-sector healthcare organizations in Saudi Arabia. The results show a significant impact of OC on this relationship. Organizations must prioritize E-HRM processes, including digital recruitment, training, and performance evaluation, to enhance employee capabilities in alignment with HR strategies to strengthen OC.

X. LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Like other social studies, this research examines the impact of E-HRM on SCA while considering SI and OC as mediating factors in private-sector healthcare services. However, the study acknowledges its limitations, warranting further research. Future studies could explore alternative mediating variables, such as leadership style, intellectual capital development, and organizational strategy, to gain a comprehensive understanding of the E-HRM-SCA relationship. Comparative studies between private and public healthcare sectors could further

enrich the literature. Additionally, this study did not account for external factors affecting E-HRM and SCA. Future research could examine external influences such as industry dynamics, regulatory environments, and technological advancements to deepen the understanding of E-HRM's impact on SCA.

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Effects on the Antecedents of Employee Misconduct, Stress and Opportunity in the Royal Malaysian Police

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Abstract- Employee misconduct (EM) exists in every organization including law enforcement agencies. Law enforcement officers such as police officers can easily abuse their power or exploit their position for personal gains which subsequently will tarnish the image of the enforcement agencies as a whole. The main objective in this study is to examine the relationship between antecedents (i.e., self-control, integrity, organizational justice, organizational politics, salary, financial pressure and lifestyle), stress and EM among enforcement officers in Malaysia. This study also to examines the impacts of opportunity on the relationship between antecedents and EM as a moderator variable. This study adopted a cross-sectional survey and the data was collected from the police officers' sample (n=428) in the area of Kuala Lumpur, Selangor, Johor, Perak and Sabah. This study found that self-control, organizational justice, salary, financial pressure and stress contributes significantly to EM. However, integrity, organizational politics and lifestyle did not contribute significantly to EM. Findings also revealed that self-control, organizational justice, salary and financial pressure contributes significantly to stress.

Keywords: antecedents, employee misconduct, enforce-ment agency, stress, opportunity.

GJMBR-A Classification: JEL Code: K42



Strictly as per the compliance and regulations of:



Effects on the Antecedents of Employee Misconduct, Stress and Opportunity in the Royal Malaysian Police

Mazlan Ismail ^α, Nor Siah Jaharuddin ^σ, Ho Jo Ann ^ρ & Zuraina Mansor ^ω

Abstract- Employee misconduct (EM) exists in every organization including law enforcement agencies. Law enforcement officers such as police officers can easily abuse their power or exploit their position for personal gains which subsequently will tarnish the image of the enforcement agencies as a whole. The main objective in this study is to examine the relationship between antecedents (i.e., self-control, integrity, organizational justice, organizational politics, salary, financial pressure and lifestyle), stress and EM among enforcement officers in Malaysia. This study also examines the impacts of opportunity on the relationship between antecedents and EM as a moderator variable. This study adopted a cross-sectional survey and the data was collected from the police officers' sample (n=428) in the area of Kuala Lumpur, Selangor, Johor, Perak and Sabah. This study found that self-control, organizational justice, salary, financial pressure and stress contributes significantly to EM. However, integrity, organizational politics and lifestyle did not contribute significantly to EM. Findings also revealed that self-control, organizational justice, salary and financial pressure contributes significantly to stress. In addition, this study also supported the moderating effect of opportunity on the relationship between antecedents (i.e., self-control, integrity, organizational justice and salary) and EM. The relationship between antecedents and EM has been documented in the literature, but the integration of antecedents (individual, organizational and socio-economic factors) explains this relationship in a single model is new in law enforcement context. In addition, this study is one of the first to test the effect of opportunity (moderator) on the relationship between antecedents and EM in the law enforcement organization in Malaysia.

Keywords: *antecedents, employee misconduct, enforcement agency, stress, opportunity.*

1. INTRODUCTION

The phenomenon of employee misconduct (EM) is becoming a universal issue at various organizations, no exception for law enforcement agencies (Chanin, 2015; Sathappan et al., 2016; Reynolds & Helfers, 2019). Porter (2021) claims that one of the biggest problems facing police agencies worldwide is police officer misconduct. The problem of misconduct involving police officers in Malaysia is at a serious level (Berita Harian Online, 2019, August 21).

Law enforcement officer such as police officer can easily abuse their powers or exploit their position for personal gains which subsequently will tarnish the image of the public sector as a whole. Lack of integrity behavior in police department will reduce public trust towards them (KPMG, 2013). For example, according to the Enforcement Agency Integrity Commission (EAIC) public complaints statistics for 2018, 2019, 2020, 2021 and 2022 shows that many law enforcement agencies have weak integrity behavior which leads to the misconduct and abuse of their power. The results indicated that a total of 4,233 misconduct complaints were received against the law enforcement agencies in Malaysia. The statistics also show that among 22 enforcement agencies, the Royal Malaysian Police (RMP) takes the highest number (73.23% or 3,100) in five years (2018, 2019, 2020, 2021 and 2022) which had been investigated regarding the misconduct and abuse of power. Given the large-scale impact of police misconduct it is imperative that a study should investigate the underlying root causes of police misconduct in RMP.

Recently, many issues have been raised regarding police conduct in Malaysia and has been given a lot of attention in the media. Among the issues that have been raised, dishonesty, drug abuse, corruption, abuse of power, use excessive force, and theft have been reported within the police force (Berita Harian Online, 2021, June 10). For example, the Pahang Malaysian Anti-Corruption Commission (MACC) has arrested two police officers and a policeman over bribery allegations of receiving bribes of between RM20,000 and RM50,000 monthly, and is estimated to have received more than RM1million from 2017 to 2022 (The Star Online, 2023, June 8). Furthermore, according to Ex-Inspector-General of Police, Abdul Hamid Bador reported that more than 100 police officers have tested positive for drugs during Ops Blue Devil operation conducted in every police contingent since 13 August 2019. This statistic shows that drug abuse (one type of misconduct) in the RMP was at a critical and serious level (Berita Harian Online, 2019, August 21).

Previous literature demonstrates that antecedents of EM among police officers are divided into three categories such as individual, organizational, and environmental/socio-economic factors (Eitle et al.,

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2014; Hough et al., 2016; Sathappan, 2017; Teh et al., 2023; Visvanathan & Kunapalan, 2020). However, few studies focus on integrating variables between individual factors, organizational factors and environmental/socio-economic factors into a single framework on EM (Adeoti et al., 2021; Bashir et al., 2019; Cox et al., 2022; Donner & Jennings, 2014; Nasurdin et al., 2014). In addition, the possible interaction between individual and situational factors was not answered by previous studies (Khattak et al., 2018). Therefore, this study strives to fill this gap by considering both, the individual factors (self-control and integrity), organizational factors (organizational justice and organizational politics) and socio-economic factors (salary, financial pressure and lifestyle) into a single model because it is important to investigate both aspects of antecedents in a single study to provide better clarity, understanding and comprehensive outcome and also to understand the complete process of employees resorting to employee misconduct behavior. This is consistent with Narayanan and Murphy's (2017) recommendation to take into account individual, organizational, and/or environmental variables on workplace deviance behavior in order to produce a holistic and all-encompassing conclusion on the interactions between all involving variables in future research.

Furthermore, previous studies on EM are mainly come from Western settings (Nasurdin et al., 2014). In most cases, these studies have been devoted to examining various antecedents of misconduct (Faqbohunge et al., 2012; Fida et al., 2015). However, limited empirical study examined the antecedents of EM in Malaysia setting (Nasurdin et al., 2014; Moorthy et al., 2015). Hence, there is a need for further research in this area to provide validation evidence of the applicability of research findings abroad to non-Western nations. Bashir et al. (2019) also suggest to include the elements of economic crises because these issues trigger stress among employee and lead to misconduct behavior.

To this end, the current study fills the gap in the literature by examining the moderating role of opportunity on the relationship between antecedents (self-control, integrity, organizational justice, organizational politics, salary, financial pressure and lifestyle) and police misconduct. Opportunity refers to the ability to override organization's internal controls mechanisms (Rae & Subramanian, 2008). An opportunity arises when employees recognize a chance to commit the unethical conduct without being detected (Said et al., 2018). In the context of RMP, this opportunity issue may surface from several sources, including the poor internal checks, inadequate training, poor surveillance, lack of prosecution, inefficient prevention programs, policies, and weak ethical culture (Said et al., 2018). Many researchers argued that opportunity is one of the factors to contribute to EM (Adeoti, 2018; Dellaportas, 2013; Said et al., 2018). Based on the Fraud Triangle Theory

(FTT) suggested three elements; pressure, opportunity and rationalization as factors trigger employee fraud (one type of employee misconduct) (Said et al., 2018b). In contrast, not many studies examined opportunity factor as a moderator effect on the relationship between antecedents and EM.

This study aims to examine the relationship between antecedents (i.e self-control, integrity, organizational justice, organizational politics, salary, financial pressure, and lifestyle), stress and EM among enforcement officers in Malaysia. This study also investigates the role of opportunity as a moderating variable between antecedents and EM in the context of policing. This study is expected to provide valuable evidence on the role of antecedents and opportunity on EM in the workplace of the police organization in Malaysia. In addition, this research finding will hope to assist the government especially the RMP in finding the causes to the EM problem and give suggestion for mitigate and resolve the EM problem.

II. LITERATURE REVIEW

a) *Employee Misconduct*

Employee misconduct (EM) refers to a variety of behaviors that are detrimental to an organization (Visvanathan & Kunapalan, 2020). These include acts that are categorically illegal, transgressions of formal organizational norms, legal actions that are not broken but nevertheless go against the spirit of the law, and counterproductive behaviors. Furthermore, according to the Ministry of Manpower, Singapore Government (2017), misconduct is defined as the failure to uphold the terms of employment in the service contract, such as dishonesty, immoral behavior, or absenteeism. Similarly, an act or omission that conflicts with the fulfillment of the explicit or implicit terms and conditions of an employee's contract of employment is referred to as misconduct (Mohamed et al., 2019). According to Aminuddin (2013, p. 250), employee Misconduct (EM) has been defined as the "improper behavior, intentional wrongdoing or deliberate violation of a rule or standard of behavior at the workplace". Misconduct is the most common ground for dismissal, and this refers to unacceptable behavior of an employee which may be categorized into three sub-headings, namely misconduct related to duty, misconduct related to discipline, and misconduct related to immorality (Mohamed et al., 2019). Furthermore, EM is the type of behavior that is harmful and costly to the organization (Fechter, 2023). Examples of EM included employee refuses to follow workplace policies or procedures, shows offensive behavior, breaks the law, purposefully damages company assets, or harms their place of employment. Terms such as misconduct, corruption and deviance are frequently used with different meanings and sometimes interchangeably (Porter, 2021).

b) *Antecedents of Employee Misconduct (EM)*

The study's limitations were reflected in the choice of important conceptions and variables, which limited its reach. Based on both theoretical and empirical evidence, the constructs and variables relevant to this investigation were inferred. The three categories of variables, i.e. individual, organizational, and socio-economic factors were formed the foundation of the framework. The individual factors include self-control and integrity, the organizational factors comprise organizational justice and organizational politics, and the socio-economic factors involve salary, financial pressure and lifestyle.

c) *Self-control and Employee Misconduct*

Self-control has been defined as "the capability of a person to override and inhibit socially unacceptable and undesirable impulse, alter and regulate his or her thoughts, behaviors and emotions" (Baumeister et al., 1994; Muraven & Baumeister, 2000). According to Khasif et al. (2020), the demonstration of self-control is the ability to regulate one's thoughts, emotions, and behaviors. In Gottfredson and Hirschi's (1990) general theory of crime, the idea of self-control was first presented. According to Gottfredson and Hirschi (1990), self-control is the overall tendency of individuals to abstain from behaviors in which the long-term repercussions transcend their current advantage (Donner et al., 2016). Restubog et al. (2010, p. 656) described self-control as "...the ability to override one's impulses and resist external influences". While self-regulation and self-control are sometimes used interchangeably, other writers define self-control as the ability to restrain one's urges in order to act morally (Peterson and Seligman, 2004a).

Self-control plays an important role in influencing the EM among law enforcement officers (Donner et al., 2016; Donner & Fridell, 2014). Previous research (Bobbio et al., 2018; Choi & Kruis, 2020; Donner & Jennings, 2014; Donner et al., 2016; Wang et al., 2021) demonstrated a relationship between self-control and employee misconduct. A study conducted by Donner et al. (2016) revealed a negative correlation between police misconduct and self-control among first-line police supervisors in the United States. Furthermore, Wang et al. (2021), which involved full-time workers from several firms in southeast China, found a negative correlation between self-control and employees' counterproductive work behavior. This finding is in line with previous study (i.e. Ishaq & Shamsher, 2016; Swanepoel, 2012; Tangney et al., 2004) found that misbehavior at work is inversely correlated with self-control. The results demonstrated congruence with the General Theory of Crime (GTC) posits that people who low self-control is more likely to participate in criminal activity, especially when given the opportunity, because they prioritize the short-term pleasure of an activity over

any potential long-term negative effects (Gottfredson & Hirschi's, 1990). Therefore, this research hypothesizes that:

H1a: There is a negative relationship between self-control and EM.

d) *Integrity and Employee Misconduct*

According to Peterson and Seligman (2004a), integrity is another individual antecedent of employee misconduct that is categorized as a character strength (Swanepoel, 2012). Integrity is defined as an individual's quality of being honest, having strong moral principles, moral uprightness and it depends on oneself to uphold oneself to consistent moral and ethical standards (Killinger, 2010). Integrity is a fundamental human quality that is currently thought to be important for a successful organizational operation in the modern world.

Numerous studies showed that integrity is associated with EM (Bazzy, 2012; Hunter, 2014; Van Staden, 2018; Swanepoel, 2012). For example, a study conducted by Van Staden (2018) found that there is a substantial negative correlation between integrity and counterproductive work behavior. Therefore, it stands to reason that someone with a high integrity level would not partake in unethical activities at work, and vice versa. The likelihood that workers would do wrongdoing, such stealing, was unaffected by changes in the environmental risk connected to the action, even for those who seemed to have a high degree of integrity. Conversely, in circumstances where there was less risk, people with low integrity were able to steal more easily than they would have in circumstances where there was more risk (Swanepoel, 2012). In addition, study by Hunter (2014) reported that integrity was significantly negative relationship on counterproductive work behavior. The findings from previous study were consistent showed that there is a significant negative correlation between integrity and EM (Swanepoel, 2012; Van Iddekinge et al., 2012). Therefore, this research hypothesizes that:

H1b: There is a negative relationship between integrity and EM.

e) *Organizational Justice and Employee Misconduct*

Greenberg (1990) defined organizational justice as an employee's perception of fairness within an organization (Asadullah et al., 2017). According to Colquitt et al. (2005) organizational justice refers to the perceived fairness of the workplace and the relationships that exist between employees and their organizations (Colquitt et al., 2013). Byrne and Cropanzano (2001) define organizational justice as an individual's sense of and response to fairness inside an organization and divided into three elements: distributive justice, procedural justice, and interactional justice (Colquitt et al., 2013). In the context of this study, organizational justice refers to the perceived fairness

within an organization, particularly in terms of how decisions are made, how employees are treated, and the overall fairness of the organizational processes.

The relationship between organizational justice and EM has been well documented (i.e. Abbasi et al., 2020; Alias and Rasdi, 2015; Colquitt et al., 2006; Fridell et al., 2020; Khattak et al., 2020; Wolfe & Piquero, 2011). For instance, research by Fridell et al. (2020) used survey information from 15,807 police officers in 101 United States departments. The findings demonstrated that organizational justice was negatively correlated with police misconduct. There is less support for wrongdoing shown by the subject the more organizational justice they see. If officers believe they are treated with respect, have a voice in agency decision-making, internal processes that are just, and outcomes that are dispersed fairly, they are less likely to publicly endorse misconduct. The results were consistent with the Social Exchange Theory (SET) (Blau, 1964). SET posits that individuals develop exchange relationships based on their experiences with others (Blau, 1964; Khattak et al., 2020). Following the norm of reciprocity (Gouldner, 1960; Levinson, 1965), individuals often repay others in the same manner as they receive; that is, good with good or bad with bad (Khattak et al., 2020). Therefore, this research hypothesizes that:

H1c: There is a negative relationship between organizational justice and EM.

f) Organizational Politics and Employee Misconduct

Organizational politics has been defined as socially influencing behaviors which are strategically designed to maximize self-interest or self-serving behavior (Ferris et al., 1994). It is further clarified as referring to acts done by people with the intention of achieving their own goals, disregarding the welfare of others in the organization (Kacmar & Baron, 1999). Previous research (i.e. Bashir et al., 2019; Clercq & Pareira, 2023; Crawford et al., 2019; Khattak et al., 2020; Meisler et al., 2019; Nasurdin et al., 2014; Ugwu et al., 2023) demonstrated a relationship between organizational politics and workplace misbehavior practices. For example, a study conducted by Crawford et al. (2019) on workers from a state government agency revealed a positive and significant correlation between organizational politics and deviant behavior. Furthermore, a study by Bashir et al. (2019) demonstrated a strong and positive correlation between interpersonal deviance and organizational politics. These findings demonstrate that workers who encounter workplace politics frequently engage in deviant workplace conduct, including unpleasant remarks to coworkers, making fun of other people, or even acting rudely. Previous findings were consistent with the Social Exchange Theory (SET) states that workers who have a negative perception of their organizations because of perceived organizational politics would react by

engaging in abnormal behavior that is detrimental to the organization (Blau, 1964). Therefore, this research hypothesizes that:

H1d: There is a positive relationship between organizational politics and EM.

g) Salary and Employee Misconduct

Salary has been defined as a pay given to employees who are exempt from regulations of the Fair Labor Standards Act and hence do not receive overtime pay (e.g., managers and professionals). Exempt pay is calculated at an annual or monthly rate rather than hourly (Milkovich et al., 2011). Van Rijckeghem and Weder (2001) argued that there is a negative correlation between the amount of civil service salary and corruption cases, and that civil workers who receive little pay are more susceptible to illegal rent-seeking. Furthermore, it's possible that the notion of inadequate compensation will lessen the moral costs associated with corruption (Abbink, 2000). Furthermore, a study by Wells (2001) discovered that employees who are happy in their professions are less likely to participate in criminal activity, such as theft and fraud. Greenberg (1990, 1993) observed that certain types of theft are associated with lower pay and underpayment for the labor that the employee performs. Thus, this research hypothesizes that:

H1e: There is a negative relationship between salary and EM.

h) Financial Pressure and Employee Misconduct

Financial pressure is defined as when an individual faces difficulty in maintaining a reasonable standard of living due to failure to have sufficient financial resources to achieve basic requirements (Ting, 2016; Yates, 2007). Financial pressure includes handful aspects of financial prospects such as assets, income, debts and money management. Financial pressure has been linked to employee misbehavior and work-related consequences such as asset theft and employee fraud (Hasnan et al., 2013; Adeoti et al., 2017; Said et al., 2017; Said et al., 2018). The Fraud Triangle Theory (FTT) was first proposed by Cressey (1953), who clarified that the pressure to commit fraud arises from the internal of an individual as a result of the pressure situation. For instance, according to Yusrianti et al. (2020) and Albrecht et al. (2018), financial pressure is the primary reason of fraud. Additionally, Rae and Subramanian (2008) claimed that greed and individual financial stress were the root drivers of fraud. Therefore, this research hypothesizes that:

H1f: There is a positive relationship between financial pressure and EM.

i) Lifestyle and Employee Misconduct

Lifestyle is defined as a person's pattern of living in the world as expressed in activities, interests, and

opinions (Kotler & Keller, 2009: p. 159). In the context of this study, lifestyle is viewed based on luxury lifestyle (Putri & Nihayah, 2017). As highlighted by Malaysian Anti-Corruption Commission (MACC) there are four main reasons why public service officers engaging in acts of misconduct and corruption were: (1) lifestyle beyond their means, (2) attitude of greed, (3) conducive opportunities in engaging in acts of corruption, and (4) low levels of integrity among the officers (MACC website, 2020). In relation to FTT (Cressey, 1950), in any crime there will always be a motive (Ernst & Young, 2016). Some examples of personal motive might be addiction to gambling or drugs, maintaining lifestyle, personal debt or, indeed, revenge. According to KPMG (2013) argued that the behavior of corruption and fraud precursor conditions together with the motivations for fraud for example, greed, lifestyle, personal financial pressure, gambling and substance abuse were the catalyst to reflect upon the behavioral antecedents for corruption and misconduct in local government (Purcell, 2014). Thus, this research hypothesizes that:

H1g: There is a positive relationship between lifestyle and EM.

j) Stress

Stress among police officers has been a primary concern for police managers, officers, and the public. This concern is reasonable in that police work was recognized as one of the most stressful professions, and police officers were exposed to a wide range of organizational and environmental stressors (Wu & Makin, 2020). Specific definitions of stress vary among researchers. For instance, Selye (1964) defined stress as "an individual's material and emotional reaction, into potentially threatening aspects of the environment" (Butt et al., 2020). Stress was described by Janis et al. (1977) as an unpleasant emotional state brought on by danger. Furthermore, stress is described by Baum et al. (1981) as a process in which external forces or events, referred to as stressors, threaten the survival and well-being of an organism. When there are persistently high pressures that an individual is unable to manage through coping mechanisms, stress is a reaction syndrome of negative impacts (Kyriacou, 1987). Research has shown that prolonged stress can cause problems on the part of officers such as physical health problems, drug dependency, substance abuse, burnout, psychological difficulties, and an increase in the likelihood of marital breakdown (Wu & Makin, 2020). While police misconduct may be a function of a wide range of factors (Makin, 2016), it has been observed that officers laboring under stress tend to show low performance and high misconduct, which is certainly at odds with the goals of the police agency (Shane 2010; Bishopp et al. 2016).

k) Self-control and Stress

Past studies showed that self-control is associated with stress (Baldwin et al., 2018; Boals et al., 2011; Bowlin & Baer, 2012; Hofmann et al., 2014; Nielsen et al., 2019). For instance, Nielsen et al. (2019) conducted a study among 4,097 respondents in Germany, Poland, Sweden, and the United States, showed that trait self-control was negatively related to stress. Furthermore, it has been suggested that individuals with low trait self-control may struggle harder to manage their thoughts and conduct (De Ridder et al., 2012). The negative relationships between stress, anxiety, and depression and self-control have been confirmed by other research (Baldwin, Garrison, Crowell, & Schmeichel, 2018; Boals et al., 2011; Bowlin & Baer, 2012; Hofmann et al., 2014). Therefore, this research hypothesizes that:

H2a: There is a negative relationship between self-control and stress.

l) Integrity and Stress

Studies examining the relationship between integrity and stress have been few. Prottas (2013) conducted a survey using a questionnaire among 2,679 sample of workers reported that behavioral integrity is negatively related to stress. Subsequent studies report similar results. For instance, Prottas (2008) reports that behavioral integrity was negatively to stress using a US representative sample of workers ($n=2,820$). Thus, individuals are low integrity will lead to high stress levels. Therefore, this research hypothesizes that:

H2b: There is a negative relationship between integrity and stress.

m) Organizational Justice and Stress

Employees assess organizational fairness based on policies, practices, and interpersonal relationships (McCardle, 2007). Employees may experience negative attitudes and emotions, such as stress, anger, frustration, and mistrust, if they believe their workplace is unfair. This could result in them acting in a deviant manner toward the company and other employees (Bies & Tripp, 1996; Folger & Skarlicki, 1998). Previous research (Elechi et al., 2020; Lambert et al., 2019; May et al., 2020; Nasuridin et al., 2014; Pérez-Rodríguez et al., 2019; Singh & Basu, 2022; Tziner & Sharoni, 2014) demonstrates a negative and significant link between organizational justice and stress. Therefore, employees who had higher perceptions of organizational injustice in their workplace perceived significantly higher stress levels. Therefore, this research hypothesizes that:

H2c: There is a negative relationship between organizational justice and stress.

n) *Organizational Politics and Stress*

The impact of organizational politics on job stress has been the subject of numerous studies (Bashir et al., 2018; Khan et al., 2022; Nasurdin et al., 2014; Vigoda, 2002). For instance, a study conducted by Khan et al. (2022) among workers in Pakistani cities of Rawalpindi, Islamabad, Lahore, Faisalabad, Gujranwala, Abbottabad, and Karachi among employees in public, private, and semi-government services organizations discovered a strong positive correlation between organizational politics and job stress. Previous research by Chen et al. (2017), Ferris et al. (1996), Landells and Albrecht (2019), and Rashid et al. (2013) supports this finding. Therefore, employees who had higher perceptions of organizational politics in their workplace perceived significantly higher stress levels. Therefore, this research hypothesizes that:

H2d: There is a positive relationship between organizational politics and stress.

o) *Salary and Stress*

Rasheed et al. (2016) examine a university study that found that low-paid workers experience high levels of workplace stress and lack loyalty to their employer. The study also found that an employee's interest in their work is influenced by their work environment. According to Marlow et al. (1996), teachers in educational institutions experience stress as a result of their poor pay. After looking into the matter more, he came to the conclusion that in order to keep instructors at the school and increase their motivation, their pay should be competitive with the market. According to Heneman and Judge (2000), research clearly demonstrated that a number of employee outcomes can be significantly and unfavorably impacted by pay discontent (Danish et al., 2015). Therefore, this research hypothesizes that:

H2e: There is a negative relationship between salary and stress.

p) *Financial Pressure and Stress*

Positive and substantial connections were identified between the level of personal financial pressure and overall personal stress in a study conducted by Bailey et al. (1998) among hospital staff. When the other elements of the work stress scale and the links between financial stress and work stress were examined, the findings were similar. There was a noteworthy and positive correlation between work-related financial stress and work-related stress. These results showed that improved financial resource management and a greater sense of financial well-being could alleviate a number of personal difficulties. A greater sense of sufficiency in relation to job pay could also have a good effect on many of the issues that arise in the workplace. Therefore, this research hypothesizes that:

H2f: There is a positive relationship between financial pressure and stress.

q) *Lifestyle and Stress*

Limited empirical study has examined the relationship between healthy lifestyle and stress. Thye (2016) argued that a healthy lifestyle (i.e., exercise pattern, eating habits, and general health practices) can reduce workplace stress. Buhr (2012) study indicated that workplace stress variables have a small effect on unhealthy lifestyle choices (probit smoker) among Canadian nurses. Therefore, employees who spend more money for luxury lifestyle perceive significantly higher stress levels. Therefore, this research hypothesizes that:

H2g: There is a positive relationship between financial pressure and stress.

r) *Stress and Employee Misconduct*

Numerous prior research has examined the relationship between stress and EM (Adekanmbi & Ukpere, 2019; Bashir et al., 2019; Lawson et al., 2021; Nasurdin et al., 2014). For instance, Lawson et al. (2021) conducted a study among 437 police officers serving in eight California police departments to investigate the impact of organizational justice and workload stressors on police misconduct. The study's findings showed a strong and positive correlation between employee workload and police misconduct. Officers' views in support of misconduct tended to be stronger when they felt their jurisdiction dealt with more violent crime, calls for assistance, and other workload-related demands than their surrounding jurisdictions. Additionally, a study conducted by Nasurdin et al. (2014) found that stress had a significant and positive impact on deviant behavior among Malaysian manufacturing firms' production operators. This is because people who are under a lot of stress are more likely to act tensely and impulsively or to behave intolerantly toward others, such as engaging in misconduct at work. Thus, this research hypothesizes that:

H3: There is a positive relationship between stress and employee misconduct.

s) *Opportunity*

Opportunity looks at the strength of policies and procedures in policing the workplace and the way in which punishment and rewards are used to enforce those policies and procedures (Ferrell et al., 2013). According to the second component of the Cressey (1953) fraud triangle theory, the most important factor in the incidence of fraud and unethical activity is opportunity. Even while someone is under pressure to commit fraud, they cannot act on that desire unless there is a chance to do so (Fisher, 2015; Cressey, 1953; Mohamed et al., 2010; Voon, et al., 2008). A chance presents itself when internal control is weak. Because they are less likely to be caught, personnel who take

advantage of weak internal controls have the opportunity to conduct fraud (Mohamed et al., 2010; Hasnan et al., 2013; Mat et al., 2019).

t) *Moderating Effect of Opportunity*

Past studies showed that antecedents (i.e., self-control, integrity, organizational justice, organizational politics, salary, financial pressure, and lifestyle) are associated with employee misconduct (Bashir et al., 2019; Donner & Jennings, 2014; Donner et al., 2017; Nasuridin et al., 2014; Wolfe & Piquero, 2011). According to the Gottfredson and Hirschi General Theory of Crime (1990), people with low self-control are more likely than people with high self-control to participate in a variety of criminal and deviant behaviors, including misconduct at work, especially when given the opportunity. Additionally, Gottfredson and Hirschi (1990) (as cited in Baek et al., 2016) assert that those who are risk-takers, impulsive, insensitive, and short-sighted are less likely to refuse the chance to conduct crimes.

A recent study by Baek et al. (2016) revealed that opportunities with low self-control had a moderating influence on online harassment. Additionally, this study

discovered a substantial positive correlation between online harassment and opportunity, particularly when it comes to parental supervision over computer usage time. Additionally, it was discovered that teenagers who are risk-takers, impetuous, insensitive, and short-sighted are more likely to commit crimes when they have fewer opportunities (less parental restriction over internet use time). Previous study by LaGrange and Silverman (1999), Moon and Alarid (2014), Seipel and Etfler (2010), and Smith (2004) supports this research finding. Pratt and Cullen (2000) asserted, however, that opportunity was not a very effective moderating predictor of crime and deviance.

From managerial perspective, it can be argued that individual factors (i.e., self-control and integrity), organizational factors (i.e., organizational politics and organizational justice) and socio-economic factors (i.e., salary, financial pressure and lifestyle) are not sufficient to reduce deviant behavior unless organization minimize opportunities for misconduct through effective internal control (Shamsudin et al., 2012; Ferrell et al., 2013). Therefore, this research hypothesizes that:

H4	Opportunity moderates the relationship between antecedents and EM.
H4a:	Opportunity moderates the relationship between self-control and EM.
H4b:	Opportunity moderates the relationship between integrity and EM.
H4c:	Opportunity moderates the relationship between organizational justice and EM.
H4d:	Opportunity moderates the relationship between organizational politics and EM.
H4e:	Opportunity moderates the relationship between salary and EM.
H4f:	Opportunity moderates the relationship between financial pressure and EM.
H4g:	Opportunity moderates the relationship between lifestyle and EM.

The previous discussion leads to the derivation of the theoretical framework for measuring EM among enforcement officers in Malaysia (see Figure 1). This proposed conceptual framework is constructed based

on three theories namely: the Gottfredson and Hirschi's (1990) General Theory of Crime (GTC), Cressey (1953) Fraud Triangle Theory (FTT) and Blau (1964) Social Exchange Theory (SET).

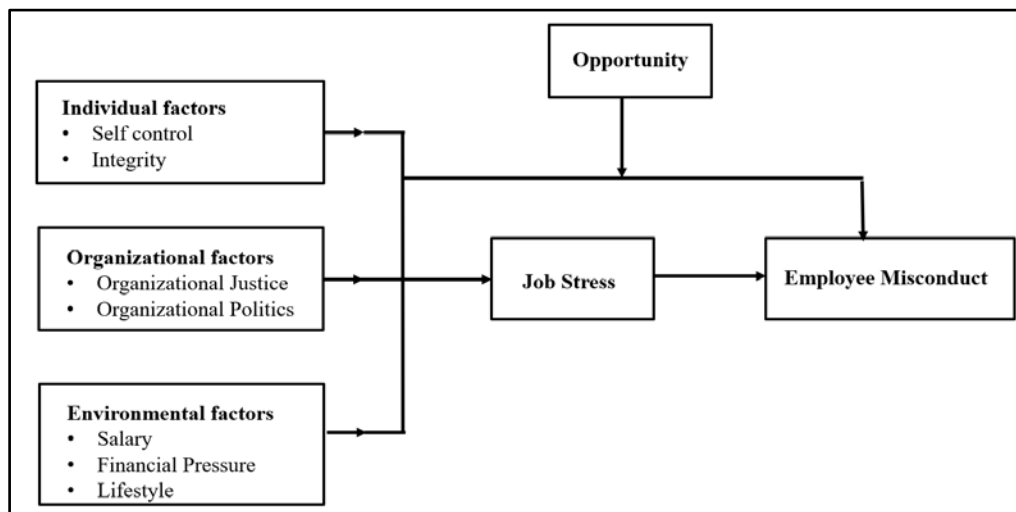


Figure 1: Research Framework

III. RESEARCH METHODOLOGY

a) *Sample and Sampling Procedures*

This study utilized a cross-sectional research design to examine the relationship between antecedents and EM among enforcement officers in Malaysia. The population of this study was enforcement officers (police officers) working in Royal Malaysian Police (RMP) located within Kuala Lumpur, Selangor, Johor, Perak and Sabah states of Malaysia. The total population of police officers in five states are 45,078 personnel (RMP, 2023). Based on the Cochran's (1977) formula with a population of 45,078, this study was determined a sample size of 381 to be the required number. The sample size of 381 meets many researchers' recommendations and agrees that the suggested sample size should be between 250 to 500 for SEM analysis (Schumacker & Lomax, 2016; Sekaran & Bougie, 2016; Kline, 2016; Rashid et al., 2021). Therefore, to avoid incomplete questionnaires that were returned and a low response rate, this study was distributed survey questionnaires to 500 participants in the targeted states.

This study utilized two-stages of multistage cluster sampling methods for data collection. This technique is used for large-scale surveys spread over large areas (Kabir, 2016). Multistage cluster sampling technique selects samples randomly and it is able to eliminate selection bias (Alias, 2013). At the first stage, the 14 states of police in Malaysia were divided into four regions, which were west, east, north and south. There was only one state purposive selected in each region except west region. Then 5 out of 14 states in Malaysia were selected in this study. The selection of states is based on two criteria such as: (i) the highest number of disciplinary cases was recorded in RMP from year 2018 to 2022, and (ii) representative to each region in Malaysia (west, south, north and east). In the second stage, two police districts (IPD) were purposively selected in each state. The selection of two police districts (IPDs) for each state based on the categories of the IPDs (i.e., Category A and B) to represent the population for each state. This study applies a simple random sampling technique in collecting data from respondents.

To avoid common method bias, a two-wave questionnaire was distributed to 500 police officers using two sets of questionnaires. The questionnaire Set A is completed by the employees using self-administered questionnaire and questionnaire Set B is completed by the supervisors via online "Google Form". In the first wave, the questionnaire set A was used to collect data on employees' perceptions of self-control, integrity, organizational justice, organizational politics, salary, financial pressure, lifestyle, stress and demographic information. A total of 450 completed self-

reported responses were received in the first wave equivalent to 90% response rate. After two weeks, the second wave of the study was conducted by sending another 368 questionnaire Set B to the supervisor to evaluate the participating employees' job performance if their supervisee had engaged in any form of EM. A total of 301 two-wave paired questionnaires were received, resulting in a response rate of 82%. A total of 22 questionnaires were excluded because of significant missing data. Only 428 employee questionnaires were identified can be used for further analysis.

The characteristics of respondents are 343 (80%) males and 85 (20%) females representing with the gender's population in RMP, which primarily dominated by males. Furthermore, more than half (51.2%) of the respondents were aged between 30 and 39 years old. Majority of the respondents were married (81.1%). Majority of the respondents possessed a SPM level, representing 58.4% (250 respondents) of the sample. This is in line with the respondents rank with majority from rank-and-file police officers (83.6%), followed by senior police officers (16.4%). In addition, the majority of the respondents (64.2%) reported their monthly income between RM3,001 and RM7,000, followed by monthly income less than RM3,000.00 (33.4%).

b) *Measurement*

The instruments utilized in this study were drawn from established instruments that were developed in the western countries and local. As a result, the instruments were modified to fit the Malaysian context. The survey was translated into the Malaysian language through back-to-back translation. The sources of questionnaire formation shown in Table 1. The level of agreement to each statement for organizational justice, organizational politics, salary, financial pressure, lifestyle, stress and opportunity variables used in this study is a 5-points Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). However, for self-control and integrity variables is a 5-points Likert scale ranging from 1 (not at all like me) to 5 (very much like me). In addition, for employee misconduct, this study used 5-points Likert scale ranging from 1 (never) to 5 (daily).

Table 1: Source of Questionnaire Formation

Constructs	Number of Items	Adapted from	Cronbach's alpha
Self-control	13	Tangney et al. (2004)	0.87
Integrity	8	Peterson and Seligman (2004b)	0.88
Organizational Justice	5	Reynolds and Helfers (2019)	0.88
Organizational Politics	6	Vigoda (2002)	0.91
Salary	6	Khalid (2016)	0.91
Financial Pressure	7	Said et al. (2018b)	0.91
Lifestyle	4	Daud et al. (2019) and Said et al. (2018a)	0.78
Stress	4	Motowidlo et al. (1986)	0.90
Opportunity	5	Khalid (2016)	0.79
Employee Misconduct	15	Martin (1994), Akaah and Lund (1994), Bennett and Robinson (2000) and Vardi (2001)	0.77

c) Data Analysis

To test the hypothesis, structural equation models (SEM) were used using AMOS version 23.0. Chi-square statistics, root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker–Lewis index (TLI), normed fit index (NFI), and relative chi-square (χ^2/df) are used to assess the goodness of the fit model. Hair et al. (2019) state a score above 0.90 for CFI, TLI, and NFI indicates a good fit. For RMSEA, a score less than 0.08 indicates a good fit (Hair et al., 2019). The relative chi-square (χ^2/df) below the cut-off value of 5.0 indicates a good fit (Bentler, 1990). To test the moderation effect, this study was conducted using the Multi-Group Analysis in AMOS (Samah, 2016). The analysis involves splitting the data into two groups based on the moderator variable: low opportunity and high opportunity. By using Multi=group analysis, the researcher is able to test moderation effects of the moderator on the overall model and the individual paths. If there is some form of moderation on the overall model, then the researcher can proceed to test the moderation effect on the individual paths.

IV. RESULTS

a) Confirmatory Factor Analysis

Confirmatory factor analysis is used to ensure the validity and reliability of the research instrument (Junusi et al., 2023). Average variance extract (AVE) and construct reliability (CR) are used to check the convergent validity of constructs. The measurement scale has convergent validity if the factor loading item is greater than or equal to 0.50, AVE values are more than 0.5 (Fornell and Larcker, 1981) and CR values are more than 0.7 (Hair et al., 2019). Based on Table 2, the value of AVE and CR for each construct in this study has met the requirement since AVE values are more than 0.5 except self-control and EM construct (Fornell and Larcker, 1981) and CR values are more than 0.7 (Hair et al., 2019) showing convergent validity. The AVE score for SC is 0.472, the IN is 0.633, the OJ is 0.589, the OP is 0.671, the FP is 0.613, the LS is 0.610, the ST is 0.738,

and the EM is 0.451. In addition, we found that the AVE for self-control and EM were 0.472 and 0.451 respectively, which less than 0.5 (Fornell and Larcker, 1981). However, according to Fornell and Larcker (1981) (cited in Huang et al., 2013) argued that the AVE value of 0.4 is acceptable due to condition that if AVE value is less than 0.5, but construct reliability is higher than 0.6, the convergent validity of the construct is acceptable. Thus, convergent validity is achieved for self-control and EM constructs. This means that all items are valid.

The CR score for SC is 0.877, the IN score is 0.896, the OJ score is 0.876, the OP score is 0.910, the SL score is 0.912, the FP score is 0.917, the LS score is 0.818, the ST score is 0.918, and the EM score is 0.799. It can be concluded that this value is greater than 0.70 (Hair et al., 2019), which means the construction is reliable.

b) Discriminant Validity

In addition, based on Table 2, the instrument used in this study also meets the discriminant validity criteria since the value of the AVE of two constructs (on diagonal) is higher than the squared correlation coefficients (on the off-diagonal) of the two constructs (Byrne, 2016). Therefore, these results confirm that all research variables have met discriminant validity since there are no multicollinearity issues within the study's constructs.

Table 2: Construct Reliability, Average Variance Extracted (on the Diagonal) and Squared Correlation Coefficients (on the Off-diagonal) for Study instruments

O'nb Constructs	CR	SC	IN	OJ	OP	SL	FP	LS	ST	EM
Self-control (SC)	.877	.472								
Integrity (IN)	.896	.301	.633							
Org. Justice (OJ)	.876	.128	.118	.589						
Org. Politics (OP)	.910	.059	.014	.141	.671					
Salary (SL)	.912	.119	.066	.144	.073	.721				
Financial Pressure (FP)	.917	.097	.083	.152	.154	.155	.613			
Lifestyle (LS)	.818	.102	.094	.038	.018	.008	.016	.610		
Stress (ST)	.918	.171	.110	.147	.068	.126	.124	.033	.738	
Employee Misconduct (EM)	.799	.235	.173	.241	.139	.243	.429	.040	.228	.451

Note: CR = Composite Reliability

Diagonals (in bold) represent the average variance extracted (AVE) while the Off-diagonals entries represent the square correlations (r^2) value.

c) *Test of Structural Model*

The next step of the analysis after validation and specification of measurement model is the structural model was developed to examine the research model in describing the direct relationship between exogenous (independent variables) and endogenous (dependent variables) as well as the indirect relationship through the mediating effect of stress. Based on Table 3 and Figure

2, this study's structural model achieved the level of good fit since all the indices have met the minimum requirement as suggested by previous studies. The relative chi-square (χ^2/df) is 1.361 which is below the cut-off value of 5.0 (Bentler, 1990). The value for RMSEA is 0.029 which is below than 0.08 (Hair et al., 2019). Other fit indices such as TLI = 0.967 and CFI = 0.970 have recorded values more than 0.9 (Hair et al., 2019).

Table 3: Goodness-of-Fit (GOF) Indices of Structural Model

Category of GOF	Fit Indices	Level of Acceptance	Authors	Results	Indication
Absolute Fit	RMSEA	< .08	Hair et al. (2019)	.029	Good fit
Incremental Fit	TLI	> .90	Hair et al. (2019)	.967	
	CFI	> .90	Hair et al. (2019)	.970	
	NFI	> .90	Hair et al. (2019)	.896	
Parsimony Fit	Relative Chi-square (CMIN/DF)	< 5.0	Bentler (1990)	1.361	

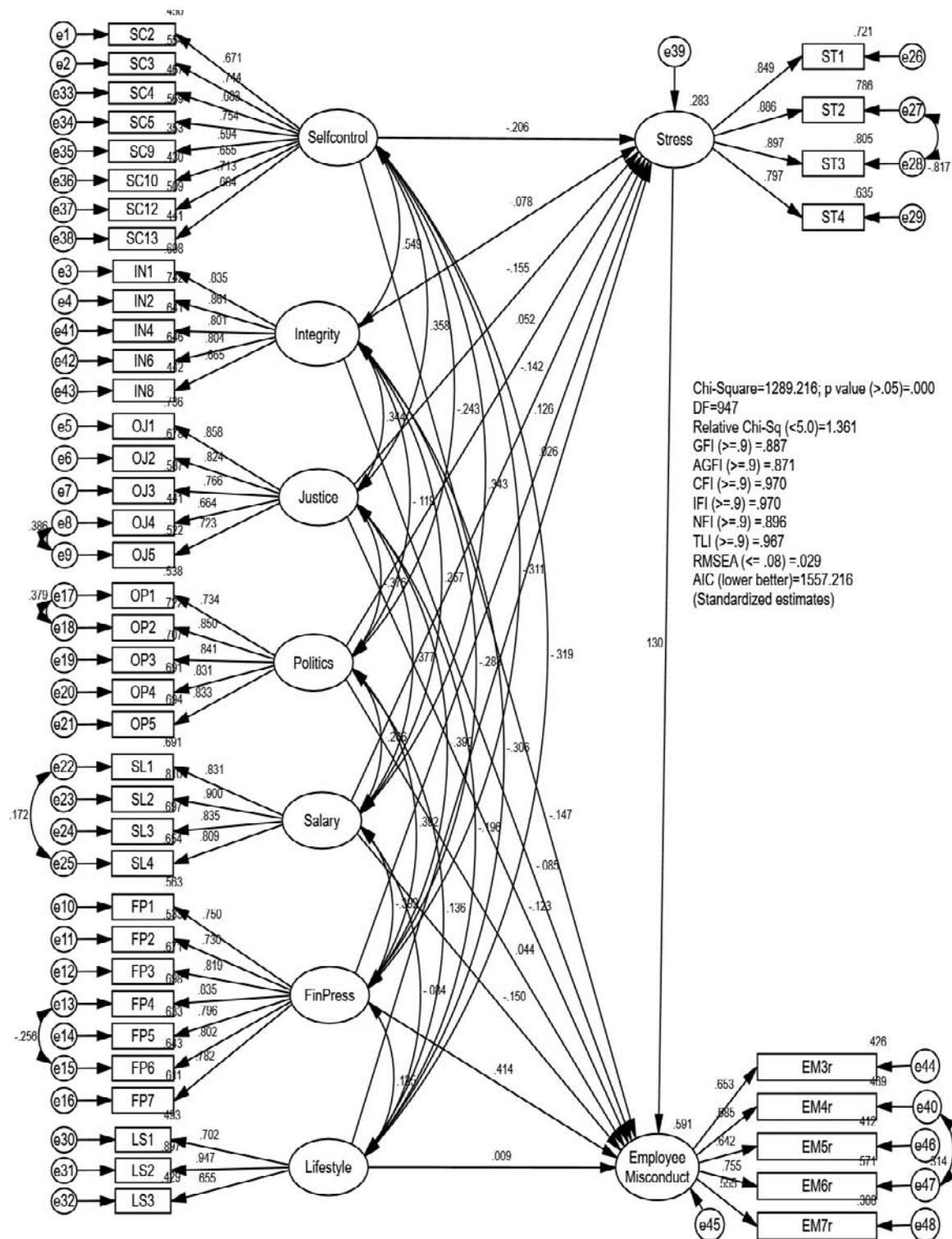


Figure 2: Structural Model of the Study

d) Hypothesis Testing Results

Based on the structural model analysis results as illustrated in Table 4, the results indicated that from seven path coefficients associated with the path linking the model's exogenous (antecedents variables) and endogenous (EM) variable, four hypothesized relationships had been significant, either positive or negative relationships at the level of 95% confidence

interval with p-values less than 0.05. These exogenous variables had been significant on the relationship with EM were: self-control ($\beta = -0.147$, CR = -2.566, p-value = 0.01), organizational justice ($\beta = -0.123$, CR = -2.371, p-value = 0.018), salary ($\beta = -0.150$, CR = -3.062, p-value = 0.002), and financial pressure ($\beta = 0.414$, CR = 7.224, p-value = 0.000). However, three hypothesized relationships had been not significant at the level of 95%

confidence interval with p-values more than 0.05 were: integrity ($\beta = -0.085$, CR = -1.597, p-value = 0.110), organizational politics ($\beta = 0.044$, CR = 0.933, p-value = 0.351), and lifestyle ($\beta = 0.009$, CR = 0.206, p-value = 0.837). Therefore, it can be concluded that self-control, organizational justice, salary and financial pressure have a significant relationship on employee misconduct among enforcement officers in Malaysia. Hence, hypothesis H1a, H1c, H1e and H1f were supported in this study.

In addition, this study found that stress was significant and positively related to employee misconduct at the level of 95% confidence interval with

p-values less than 0.05 ($\beta = 0.113$, CR. = 2.748, p-value = 0.006) (Table 4). This finding can be interpreted as increasing the level of stress will increase in employee misconduct. Therefore, it can be concluded that stress has a significant and positive relationship on employee misconduct among enforcement officers in Malaysia. Hence, hypothesis H3 was supported.

Furthermore, the value reported for coefficient of determination (R^2) is 0.59. Hence, it can be said that 59% of the variance in employee misconduct is explained by eight factors. However, there are still another 41% other factors not explained in the model for variance in employee misconduct.

Table 4: Results of SEM on Effect of Antecedents on Employee Misconduct

Path	Estimate of regression coefficient (B)	Standard Error (SE)	Beta (β)	Critical Ratio (CR)	Significance value (P-value)	Findings
EM <-- SC	-.121	.047	-.147	-2.566	.010	H1a: Supported
EM <-- IN	-.060	.038	-.085	-1.597	.110	H1b: Rejected
EM <-- OJ	-.082	.034	-.123	-2.371	.018	H1c: Supported
EM <-- OP	.026	.028	.044	0.933	.351	H1d: Rejected
EM <-- SL	-.087	.028	-.150	-3.062	.002	H1e: Supported
EM <-- FP	.272	.038	.414	7.224	.000	H1f: Supported
EM <-- LS	.006	.028	.009	.206	.837	H1g: Rejected
EM <-- ST	.088	.032	.130	2.768	.006	H3: Supported

Note: $R = .769$, $R^2 = .591$

Legend: SC = Self-control, IN = Integrity, OJ = Organizational Justice, OP = Organizational Politics, SL= Salary, FP = Financial Pressure, LS = Lifestyle, ST = Stress, EM = Employee Misconduct, R = Multiple correlation coefficient and R^2 = Coefficient of determination.

Based on the structural model analysis results as illustrated in Table 5, the results obtained that from seven path coefficients associated with the path linking the model's exogenous (independent variables) and endogenous (stress) variables, four hypothesized relationships had been significant, either positive or negative relationships at the level of 95% confidence interval with p-values less than 0.05. These independent variables had been significant on the relationship with stress were: self-control ($\beta = -0.206$, C.R = -3.336, p-

value = 0.000), organizational justice ($\beta = -0.155$, C.R = -2.772, p-value = 0.006), salary ($\beta = -0.142$, C.R = -2.714, p-value = 0.007), and financial pressure ($\beta = 0.126$, C.R = 2.351, p-value = 0.019). However, three hypothesized relationships had been not significant at the level of 95% confidence interval with p-values more than 0.05 were: integrity ($\beta = -0.078$, C.R = -1.351, p-value = 0.177), organizational politics ($\beta = 0.052$, C.R = 1.007, p-value = 0.314), and lifestyle ($\beta = 0.026$, C.R = 0.544, p-value = 0.586). Therefore, it can be concluded that self-control, organizational justice, salary and financial pressure have a significant relationship on stress among enforcement officers in Malaysia. Hence, hypothesis H2a, H2c, H2e and H2f were supported in this study.

Table 5: Results of SEM on Effect of Antecedents on Stress

Path	B	S.E	Beta	C.R	P-value	Findings
Stress <-- Self-control	-.251	.075	-.206	-3.336	.000	H2a: Supported
Stress <-- Integrity	-.083	.061	-.078	-1.351	.177	H2b: Rejected
Stress <-- Org. Justice	-.153	.055	-.155	-2.772	.006	H2c: Supported
Stress <-- Org. Politics	.045	.045	.052	1.007	.314	H2d: Rejected
Stress <-- Salary	-.122	.045	-.142	-2.714	.007	H2e: Supported
Stress <-- Fin. Pressure	.123	.052	.126	2.351	.019	H2f: Supported
Stress <-- Lifestyle	.025	.046	.026	0.544	.586	H2g: Rejected

Note: $R = .532$, $R^2 = .283$

Legend: B = Unstandardized Estimates, S.E = Standard Error, Beta = Standardized regression weight (Path coefficient), C.R = Critical Ratio, R = Multiple correlation coefficient and R² = Coefficient of determination.

The test for the effect of the moderating variable of opportunity on the relationship between antecedents and EM, the analysis was conducted using the Multi-group analysis in AMOS. A moderator variable is a variable that alters the strength of the causal relationship between independent (predictor) and dependent variable (Baron & Kenny, 1986; Rose et al., 2004). The analysis involves splitting the data into two groups based on the moderator: low opportunity and high

opportunity. There are two-stage tests of moderation effect. By using Multi-group analysis, the researcher is able to test moderation effects of the moderator on the overall model and the individual paths. If there is some form of moderation on the overall model, then the researcher can proceed to test the moderation effect on the individual paths. According to Hair et al. (2019), the path is moderated if Beta for the one group is significant while Beta for the other group is non-significant, or both Betas for both groups are significant, however Beta for one group is positive while Beta for the other group is negative.

Table 6: Results of Moderation Effect of Opportunity on Relationship between Antecedents and EM

Paths	B	Beta	CR	P	Status	Decision
Self-control - EM						
Low OPP	-0.096	-0.129	-1.484	0.138	NS	H5a: Supported
High OPP	-0.144	-0.162	-2.155	0.031	S	
Integrity - EM						
Low OPP	0.056	0.070	0.830	0.406	NS	H5b: Supported
High OPP	-0.111	-0.163	-2.398	0.016	S	
Org. Justice - EM						
Low OPP	-0.057	-0.092	-1.209	0.227	NS	H5c: Supported
High OPP	-0.126	-0.175	-2.525	0.012	S	
Org. Politics - EM						
Low OPP	-0.002	-0.004	-0.047	0.962	NS	H5d: Not Supported
High OPP	0.039	0.058	0.970	0.332	NS	
Salary - EM						
Low OPP	-0.095	-0.181	-2.433	0.015	S	H5e: Supported
High OPP	-0.078	-0.124	-1.945	0.052	NS	
Financial Pressure - EM						
Low OPP	0.289	0.525	5.318	0.000	S	H5f: Not Supported
High OPP	0.270	0.349	4.947	0.000	S	
Lifestyle - EM						
Low OPP	0.069	0.131	1.822	0.069	NS	H5g: Not Supported
High OPP	-0.060	-0.081	-1.483	0.138	NS	

Legend: B = Unstandardized Estimates, Beta = Path coefficient, CR = Critical Ratio, P = P-value, S = Significant, NS = Not significant, OPP = Opportunity and EM = Employee Misconduct

As shown in Table 6, opportunity moderates the relationship between four independent variables (i.e., self-control, integrity, organizational justice, and salary) and EM. However, opportunity does not moderate the relationship between three independent variables (i.e., organizational politics, financial pressure, and lifestyle) and EM.

V. DISCUSSIONS

The first objective of the present study was to examined the relationship between antecedents (self-control, integrity, organizational justice, organizational politics, salary, financial pressure, and lifestyle) and EM among enforcement officers in Malaysia. Specifically, our result indicated that the dimensions of individual factors (i.e. self-control), organizational factors (organizational justice), and socio-economic factors (i.e. salary and financial pressure) were significantly associated to EM. The finding means that when

enforcement officers with high levels of self-control are less engaged in misconduct. The findings are consistent with previous studies that emphasized the negative significant relationship between self-control and workplace misconduct among law enforcement officers (Donner et al., 2016; Donner and Jennings, 2014; Donner et al., 2021; Wang et al., 2021). The result also strongly supported with Gottfredson and Hirschi (1990) general theory of crime postulation that employees with low self-control were highly likely to commit workplace misconduct and crime (Donner and Jennings, 2014; Donner et al., 2016; Moon et al., 2012). Similarly, when enforcement officers perceived high levels of unfair treatment within the organization are leads to higher workplace misconduct. The result obtained from the current study is consistent with the findings retrieved from prior studies found that negative relationship between organizational justice and police misconduct (Hashish, 2020; Fridell et al., 2020; Reynolds and Helfers, 2019; Wolfe and Piquero, 2011). The results are consistent with social exchange theory posits that employees tend to reciprocate with destructive behavior when the perceptions of justice in the organization are low (Abbassi et al., 2020).

The second objective of the present study was to examined the relationship between antecedents (self-control, integrity, organizational justice, organizational politics, salary, financial pressure, and lifestyle) and stress among enforcement officers in Malaysia. Specifically, our result indicated that the dimensions of individual factors (i.e. self-control), organizational factors (organizational justice), and socio-economic factors (i.e. salary and financial pressure) were significantly associated to stress. The results show that police officers' stress levels throughout their duties and responsibilities in Malaysia are predicted by their degree of self-control. This result is in line with earlier stress-related research, which demonstrated a negative relationship between occupational stress and self-control (Hamilton et al., 2014; Nielsen et al., 2019; Siddiqui et al., 2021). In addition, the research findings states that there is a negative and significant relationship between organizational justice and stress among enforcement officers in Malaysia. This implies that when enforcement officers perceive their work environment as fair and just, it is associated with lower levels of stress. This refers to the perceived fairness and justice within an organization, particularly in terms of how decisions are made, resources are allocated, and employees are treated. This result in line with the previous research demonstrated a negative relationship between organizational justice and stress (Boateng & Hsieh, 2018; Elechi et al., 2020; Lambert et al., 2019; May et al., 2020; Nasurdin et al., 2014; Pérez-Rodríguez et al., 2019; Wolfe & Piquero, 2011). Furthermore, results states that salary has a negative and significant relationship with stress among

enforcement officers in Malaysia. This finding is consistent with the previous studies that reported salary was a significant and negative relationship on stress (Danish et al., 2015; Mosadeghrad et al., 2011; Sivarajah et al., 2014). It means that employees with a high level of salary are less stressed at work. Therefore, it can be concluded that a better level of perception towards pay or salary satisfaction reflects the satisfaction in the financial matters, which reduces the stress among enforcement officers. In a similar vein, research findings demonstrate that stress and financial pressure are significantly positively correlated among Malaysian law enforcement officials. This result is consistent with a systematic study conducted by Guan et al. (2022) found a positive correlation between depression and financial stress. These results imply that improved financial resource management and a greater sense of financial well-being could alleviate a number of personal difficulties. A greater sense of sufficiency in relation to job pay could also have a good effect on many of the issues that arise in the workplace.

The third objective of the present study was to was to examine the relationship between stress and employee misconduct among enforcement officers in Malaysia. Finding of this study revealed that stress is positively and significantly related to employee misconduct. This finding means that when enforcement officers experienced higher levels of work-related stress, they would participate in more misconduct behavior at work. This finding is consistent with the findings retrieved from prior studies (Adekanmbi & Ukpere, 2019; Bashir et al., 2019; Bishopp et al., 2020; Bishopp et al., 2016; Nasurdin et al., 2014; Silva & Ranasinghe, 2017). found that police officers with high levels of stress are highly engaged in misconduct. As argued by Agnew (1992) general strain theory (GST), stress tend to generate negative emotion responses (i.e., anger, fear, frustration, and burnout) that create an internal pressure, which in turn are likely to lead to committing crime and deviance (Wu & Makin, 2020).

The fourth objective of the present study was to examined the moderating effect of opportunity on the relationship between antecedents (self-control, integrity, organizational justice, organizational politics, salary, financial pressure, and lifestyle) and EM among enforcement officers in Malaysia. Our results produced evidence that opportunity moderates the relationship between self-control, integrity, organizational justice, salary and EM among enforcement officers in Malaysia is significant. The finding suggests that the negative correlation between self-control and EM is stronger when presented with high opportunity ($\beta = -0.162$, p -value = 0.031) other than low opportunity ($\beta = -0.129$, p -value = 0.138). This meant that enforcement officers with higher opportunity have stronger tendencies to engage in misconduct when subjected to self-control, in comparison to those with low opportunity. The result of

the current study is also consistent with the studies conducted by previous scholars, which claims that opportunity moderates the relationship between self-control and deviance (Baek et al., 2016; LaGrange & Silverman, 1999; Longshore & Turner, 1998; Moon & Alarid, 2015; Seipel & Eifler, 2010; Smith, 2004). Furthermore, results revealed that opportunity significantly moderates the relationship between integrity and EM among enforcement officers in Malaysia. This finding suggests that the negative correlation between integrity and EM is stronger when presented with high opportunity ($\beta = -0.163$, $p\text{-value} = 0.016$) other than low opportunity ($\beta = 0.070$, $p\text{-value} = 0.406$). This meant that enforcement officers with higher opportunity have stronger tendencies to engage in misconduct when subjected to integrity, in comparison to those with low opportunity. This study found that employees who has low integrity (i.e., dishonest, weak moral principles and ethical values) are more likely to commit misconduct with high opportunity (i.e., weak internal control system, poor security over company property, fear of exposure and likelihood of detection, or unclear policies and standard operating procedure). In other words, the lower integrity and the higher opportunities employees have, the more they commit misconduct. This implies that an organization's internal control system buffers the association by strengthening the negative influence of integrity on misconduct. Since self-control and self-discipline is inter-related, past studies found that self-control plays a role in integrity (Berry et al., 2007; Sackett & Wanek, 1996). Furthermore, both self-control and integrity have been found to be significant predictors of counterproductive behaviors (Marcus & Schuler, 2004; Ones et al., 1993; Vohs et al., 2008).

In addition, research findings states that opportunity significantly moderate the relationship between organizational justice and EM. This result suggests that the negative correlation between organizational justice and EM is stronger when presented with high opportunity ($\beta = -0.175$, $p\text{-value} = 0.012$) other than low opportunity ($\beta = -0.092$, $p\text{-value} = 0.227$). This meant that enforcement officers with higher opportunity have stronger tendencies to engage in misconduct when subjected to organizational justice, in comparison to those with low opportunity. As such, these results provide empirical support for the fraud triangle framework as proposed by Albrecht (1996), and specifically, suggest that employee fraud increases when both the motivation (i.e., the incentive and/or rationalization) and the opportunity exists (as cited in Rae & Subramaniam, 2008). This finding is also consistent with previous study conducted by Rae and Subramaniam (2008), which revealed that the quality of internal control procedures has a moderating effect on the relationship between perceptions of organizational justice and employee fraud. In a similar vein, results as shown in Table 6, revealed that presence of opportunity

significantly moderates the relationship between salary and EM. The finding suggests that the negative correlation between salary and EM is stronger when presented with high opportunity other than low opportunity. This meant that enforcement officers with higher opportunity have stronger tendencies to engage in misconduct when subjected to salary, in comparison to those with low opportunity. In general, the results obtained from the current study are consistent with the findings retrieved from prior studies (Baek et al., 2016; LaGrange & Silverman, 1999; Longshore & Turner, 1998; Moon & Alarid, 2015; Seipel & Eifler, 2010; Smith, 2004), which claim that opportunity play it role as moderator in deviant behavior (i.e., crime and fraud). These results supported the fraud triangle theory that argued on opportunity as one of the most important factors contributing to fraud or unethical behaviors in the workplace. This shows that opportunity moderates and modifies the strength of the relationship between salary and employee misconduct among enforcement officers in Malaysia.

The findings of this study provide a new contribution to the research area of employee workplace behavior (EWB), specifically in employee misconduct literature. First, this study contributes to the development of the model that was tested in this study which represented interrelationship between the studied variables as illustrated in Figure 1. This theoretical framework improves our knowledge on the integrating of antecedents (individual, organizational and socio-economic factors) on EM and the moderating role of opportunity in the Malaysian enforcement agencies context. Nonetheless, to date, there has been a little study that has investigated the multiple pertinent antecedents of EM collectively (Malik & Lenka, 2019). Previous research examined these antecedents have primarily focused mainly on individual and organizational factors in separate studies (e.g., Alias et al., 2013a; Bashir et al., 2019; Farhadi et al., 2012; Nasurdin et al., 2014). Unfortunately, sparse research has been given attention on the relationship between socio-economic factors and EM. Thus, the current study makes an original contribution to the literature since this study investigate the roles of individual, organizational and socio-economic factors coupled with opportunity in affecting EM concurrently in one comprehensive framework.

Furthermore, the results of this study contribute to the extended of the General Strain Theory (GST) (Agnew, 1992) to examined the applicability of GST in explaining the relationship between antecedents, stress and misconduct among enforcement officer in Malaysia. As it has been recognized that police work is a stressful job (Bishopp et al., 2018; Bishopp et al., 2020; Omar et al., 2020; Piquero et al., 2013; Strauss, 2017; Wu, 2018), and officers, especially frontline officers, normally face a wide range of stressors, the General Strain theory (GST)

provide a good theoretical framework to understand the reactions of officers to stress and its consequence on police misconduct. GST had been the most recent theory used by researchers specifically in criminology and workplace deviant studies (i.e., Alias et al., 2013a; Nasurdin et al., 2014; Radzali, 2015). However, few research studies have employed this theory on police misconduct in the policing context (Bishopp et al., 2016; Park, 2015; Wu, 2018).

The findings of the present study have several implications for practitioners and policy makers in both Ministry of Home Affairs (MOHA) and Royal Malaysia Police (RMP) Department on how to formulate preventive strategies to mitigate the EM problem among police officers. Also, the present findings could be applied to other Malaysian enforcement ministries and departments (i.e. Immigrations Department, Road Transport Department, States Local Authorities) as a tool for preventing misconduct behavior in the workplace. Firstly, at the individual level, enforcement officer should be trained on how to develop self-control to enhance the management of emotions in regulating employee's behavior within the workplace, influencing ethical decision-making, stress management, goal pursuit, and interpersonal dynamics. Similarly, in the context of enforcement organizations, low self-control can be detected through two primary avenues: 1) pre-employment detection and 2) post-hiring detection. Secondly, at the organizational level, police administrators or HR department in RMP must treat their members fairly and make use of fair procedures in allocating rewards. Specifically, policies on pay raises and promotions must be transparent, clearly-defined, and objective. One suggestion would be to implement a career development and promotion system based on merit. In addition, the RMP Human Resource Department needs to do a comprehensive study for an application to review the police salary scheme and allowances in line with their duties to protect the security and ensure peace and order in the country and the increasing cost of living. The last government made a review of the salary scheme for police and civil servants was conducted in 2013 quite a long time (Malaymail, 2023).

A number of limitations were identified in relation to this study. First, there are still some limitations in employing non-self-reported measures to assess employee misconduct behaviour, despite having obtained data from supervisors to address any concerns about same-source bias. Supervisors aren't always the best providers of information regarding their workers' work behavior. Employees and their co-workers may be able to record their job behavior with greater accuracy than supervisors. Furthermore, some supervisors may present biased information due to favoritism. Hence, it is recommended that when undertaking research on sensitive topics, non-self-report

measures or a combination of self-report and non-self-report measures could be more beneficial and accurate (Dar, 2011). Secondly, the sample was drawn entirely from police officers employed in the Malaysian enforcement agencies, which may limit the generalisation of the findings. In Malaysia, there are other enforcement agencies and departments (such as customs, immigrations, and road transport department) that could represent the enforcement sectors too. Since different enforcement agencies have different working cultures, working conditions/ environments, manpower and responsibilities, the findings may be different. Hence, for future study we suggest to gather data from other departments such as the Immigration Department of Malaysia and the Road Transport Department in order to further generalize the current findings on the enforcement agencies because these agencies also indicate second and third highest problems with employee misconduct among enforcement agencies in Malaysia (EAIC, 2022).

VI. CONCLUSIONS

In conclusion, employers should realize that individual self-control, organizational justice, salary and financial pressure will eventually affect employees' behavioural responses through their affective internal state. The results obtained from this study further suggest that enforcement officers who are low self-control are likely to engage in EM, supporting Gottfredson and Hirschi's (1990) general theory of crime. Moreover, it has been confirmed that perceptions of organizational injustice among enforcement officers lead to justifications to engage in misconduct acts. On the other hand, economic and social problems such as low salary and financial pressure among enforcement officers have significant consequences that lead to employees engaging in unethical behaviors in the workplace. This finding also revealed that enforcement officers experienced stress due to low self-control, injustice, low salary and financial pressure, which further pushed their behavioral outcomes (i.e. misconduct). Therefore, to mitigate workplace misconduct, organizational authorities should focus on to develop employee self-control. Conversely, employees' stress levels could be reduced by organizational justice and fair treatment from leaders, which would reduce the possibility of misbehavior in the workplace. By doing this, workers are less likely to feel stressed out or unsatisfied, which lowers their likelihood of engaging in misconduct behavior.

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A Technical Report on Rate Analysis and Dressing Feed Rate of Courts Megastore's Information Technology Processes

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Abstract- The proposal discusses about the information technology and information systems infrastructure underpinning the organisation for this project, Courts Megastore, Singapore. Courts Singapore is a retail outlet that is a one-stop retail and furnishing solution that offers different household and electronic products in various locations in Singapore. It is a listed company that is owned by the Courts Group International Limited, Singapore. It has released, according to its press announcements, approximately 57.09% of the shares to Singapore Retail Group Ltd. as the main owner. The new format of Courts resulted in a 'Big Box' Courts Megastore solution, which is unlike the previously silos-formatted retail shops. The said megastore was opened on 16 December 2006, and focused on key elements such as the combination of a traditional focus on value with a more experiential and service-orientated layout. In 2007, the group sales increased by 8.1% from S\$308.3 m to S\$333.4 m from 2006 due to having placed vital products at the forefront of the retail stores as well as the gradual cessation of many non-performing retail outlets in other parts of Singapore (Courts Singapore Limited, 2008).

Keywords: courts, retail, information technology, information system, network operating system, microsoft management console, remote access services, rate analysis, dressing feed rate, labour cost.

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Abstract- The proposal discusses about the information technology and information systems infrastructure underpinning the organisation for this project, Courts Megastore, Singapore. Courts Singapore is a retail outlet that is a one-stop retail and furnishing solution that offers different household and electronic products in various locations in Singapore. It is a listed company that is owned by the Courts Group International Limited, Singapore. It has released, according to its press announcements, approximately 57.09% of the shares to Singapore Retail Group Ltd. as the main owner. The new format of Courts resulted in a 'Big Box' Courts Megastore solution, which is unlike the previously silo-formatted retail shops. The said megastore was opened on 16 December 2006, and focused on key elements such as the combination of a traditional focus on value with a more experiential and service-orientated layout. In 2007, the group sales increased by 8.1% from S\$308.3 m to S\$333.4 m from 2006 due to having placed vital products at the forefront of the retail stores as well as the gradual cessation of many non-performing retail outlets in other parts of Singapore (Courts Singapore Limited, 2008). The study will also uncover the delivery schedule and theorise the "dressing feed rate" principle under the "rate analysis" concept, which is the total of the labour rates, machine rates, and other overhead rates related to labour and machinery involved in the project.

Keywords: courts, retail, information technology, information system, network operating system, microsoft management console, remote access services, rate analysis, dressing feed rate, labour cost.

1. CURRENT SYSTEM AND PROBLEMS

With the completion of Courts Megastore in December, it now joins many of the other giant hypermarkets such as Giant and Carrefour. This infers based on preliminary data that there would be more competition within a very fire-tight market that is already tightening its belt. The per usual problem with Courts's mediocre performance is that it does not entice heavy traffic or sales to their shops. With an unpredictable yet reliable local Singapore economy and housing market, it is cardinal to implement stronger portfolios and strengthen Courts's position in the market. This would require developing an information systems strategy through integrating – information technology, information systems and operation systems – to produce an enhancement solution, and the main

focus of this solution is to manage the consumer credit offering using a suite of information technology and systems to help offset the decline of gross profit margins. With the nation employing different modes of electronic payment in recent years, more electronic payment options such as e-wallets, digital cards, as well as other contactless and online payment solutions including PayNow, GrabPay, DBS PayLah!, Apple Pay, Google Pay, and Buy Now, Pay Later (BNPL) services. Such operations would increase administrative and service charges, targeting consumer credit options to wait-out the costs issue. By avoiding or removing electronic payment options due to higher administrative and service costs is not feasible. Obsolete business and information systems would also see an adjustment and upgrade to take advantage of the development of fourth generation internet that welcomes debit and credit purchases over the network coverage offered to retail clusters in Singapore. Additionally, there is also a global emphasis on shopping online where Courts and large-format stores have enjoyed region-wide success. For example, in Thailand, Courts is now focused on the strategic choices within the information technology environment to develop regional Asian businesses.

Currently, Courts uses the normal type of network operating systems (NOS) which support a variety of networking elements such as protocols, files, hardware, and internet applications with popular choices including Novell, UNIX, Linux, and Windows. The older model of operating system used in Courts merchandising website is Microsoft Windows NT 3.0 which supports the 32-bit version of networking. It introduced features like preemptive multitasking, protected memory, and multiprocessing support (Chakraborty, 2014). Many of the connected items include a router, multiplexer, switches and bridges that offer users full networking functionality such as good bandwidth and multiplexed services such as text, voice, media and other forms of data. However, there are some disadvantages of this current system:

- Users are not able to run application programs and get shared access to data. This would hamper the efficiency of information update.
- Failure of primary server with no back-ups. Many peripherals may disrupt the network and NOS.

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- Depends on systems manager and parts of computer. A badly run network may allow external users with little protection. Damage could also be caused by non-experts, such as deleting important files.
- Some of the software and hardware parts are not compatible with the newer 64-bit version.
- Speed rate of this network has grown with little improvements to increase traffic and protection.
- It is getting more difficult to manage with several attacks towards the confidentiality and integrity of stored data.

Based on my research of the networked Windows NT 3.0 system with Service Pack 3 (SP3), it was found to be installed on standard PCs in Courts's I.T. department. According to Lindskog, Hedbom and Jonsson (1999), both server and workstation versions of the operating system were used. The analysis uncovered a number of vulnerabilities, most of which were also demonstrated in practice using so-called exploit scripts (ibid). This exploit script is a program designed by a skilled hacker to undermine the system and the code can be downloaded easily from the website (Lindskog et al., 1999). Other attacks can include extracting encrypted passwords from the SAM database, mounting and reading an NTFS volume, allowing anonymous logon, cracking and capturing passwords with executable codes.

II. PROPOSED SYSTEM

a) *Advantages of New System and Objectives*

Courts would require extra servers to provide high-end computing features to the business due to the sophistication of the internet. Courts's local area network (LAN) system employs better built-in protection from the internet, which is something that businesses have control over. It is a network of several bandwidths connected with several server applications. Courts possesses a central server of a single PC with other tens or hundreds of computers and equipment in each office and retail store. But it is not entirely a workstation since it hardly specialises in any important tasks such as recording vital transfers. But workstations offer a higher level of robustness and durability in processing data. Courts's current network typology is rather obsolete, which is a ring network configuration. This is a type of network in which each of the nodes of the network is connected to other nodes in the network forming a ring. All data transmitted between nodes travel from one node to the next node in a circular manner. This could be enhanced into a star which reduces the probability of a network failure by connecting all of the peripheral nodes to a central node (Groth and Skandier, 2005).

More importantly, a server network involves running a program on a computer somewhere which connects via a network to another computer, called a

server (Walia and Divyanshu Sinha, 2018). This computer could be an end-user customer wishing to procure products online, and the server would have to facilitate this transaction. Computers or terminals running similar or non-similar operating systems cannot participate in a common network for sharing resources. These resources include elements such as computers, printers, monitors, files, scanners or wireless access tools (ibid). Thus, there is also a need to bring in a new type of network that can essentially allow a computer's operating system to connect with the other resources or computing equipment regardless of the location. This can involve using hubs, gateways to share files for vital communication, updating of data and information once a sale transaction has been completed online, or connecting with a supplier's terminal to inform of new supplies or purchases. A LAN is still preferred as a start since it can later be connected with more megastores to form a Wide Area Network (WAN).

Consider the case of Microsoft Management Console (MMC). MMC is one of the primary administrative tools used to manage Windows and many of the network services provided by Windows (Gambrel and Weinstein, 2011). It provides a standard method to create, save, and open the various administrative tools provided by Windows lets system administrators create much more flexible user interfaces and customize administration tools and as when there are new staff or customers. File systems are different from local and network ones and if there are any unnecessary files on the network, they can be deleted without being restored. There are also ways to synchronize files between ordinary windows and window network. This would maintain and update tasks if the computer is likely to remain idle for long periods in the personal mode.

Based on 8 users work requirements in a division or department of staff, a proper network system running the NT 5.0 can be created to access even remote files or folders connected to loyal suppliers, which may be grouped in this category, and to be able to access certain category of product data. Still, this would limit access to network, and also provide more discipline and organisation to the users, as to who should be able to see what information, such as a company salary spreadsheet, or a proposal meant only for the director, CEO, and chairman. This would create vital communication and foster relationship. Lower group divisions would also mean ownership of data and freedom to disseminate information that is relevant. The internal policies of allowing staffs to use terminals at any remote points are applicable. Win 2000 Professional shares its own resources and provide network services. There is at least one protocol in common for language sharing. There is peer-to-peer file sharing that allows strict security codes for each individual. Thus, if the information was not designated for the particular

personnel, a legal warning of file stop sharing option is available. But policies should be written by Courts I.T./I.S. management not to disrupt or stop anybody from file sharing where appropriate. To access the network, there is a requirement to understand the protocols and the provision of access dial up code, modem number or username/passwords to get into the network, or otherwise the user would not be entitled access into the network. This would deter the abuse of users by indefinite logging since IP/TCP addresses on networks can be changed. Data encryption is also used to scramble data that is sent out which cannot be tracked by cookies or other internet viruses (Oduroye and Sarumi, 2024).

Courts's many vendors of I.T. appliances have provided both hardware and software solutions to gain remote access to various types of networked information in Courts's servers. This revolves around the concept of Remote Access Services (RAS). According to Allen, Hunter, and Dinerman (2006), RAS refers to any combination of hardware and software to enable the remote access to tools or information that typically reside on a network. It can be installed during the initial setup phase or after. To connect a remote site from the office, the workstation must have a LAN manager network driver to access the network from the office, and the RAS drivers to access the network from a remote site (Hewlett Packard, 2008). Some of the required equipment include adapter cards, modems, multiport cards, smart cards etcetera. These devices must be chosen carefully depending on compatibility and costs. On an evaluative hindsight, these advantages would satisfy the corporate objectives: to upgrade an older networking model to a newer ubiquitous one; to multitask more efficiently and better manage processes to support creation, execution and stoppage of commands; to allow efficient usage, retrieval and storage of information of processes; to increase and allocate more memory by data compression and fragmentation.

III. TARGETED AUDIENCE

The users include non-IT experts and also include:

- Top level management
- All senior and junior staff that are authorized
- External vendors
- Loyal Customers
- Other stakeholders

a) *Peer-to-Peer Model*

The network to be employed is the peer-to-peer configurative model. This network allows communication between every computer on the network with granted rights to access. Any computer on the peer-to-peer network is considered a server, as long as it shares a printer, folder, drive or some other resources. According

to Mueller (2003), there is no limit to the size of computers although Win 2000 Pro allows only 8 stations, but this would be sufficient requirement for Courts megastore and the head office. The advantage is in its flexibility to interchange between a workstation and server as well as relatively low costs of client software. Due to the architecture design of this network, the only problem is that it is more susceptible to security breaches since the folders, datafiles and other code files are subjected to a common password. Being essentially the offshoot of e-commerce systems, the upgrading of information technology and services engaged in Courts retail allows new forms of partnership, online products and services to evolve, overriding the worries of boundaries and cost issues.

b) *The Rise of E-Commerce*

As I consider the rise of e-commerce and mobile solutions, I must relate the possibilities of Courts's peer-to-peer network technology against other participants sharing a part of their own hardware resources through Courts's distributed network architecture, accessible only by other peers without passing through market intermediary entities (Kellerer, 1998). The chosen file sharing website is a domain hosted under courts.com.sg. The value proposition for most internet buyers is that Courts website is an open-source, digital platform to register details, upload requests, share product or service problems, make price comparisons, single out product popularity, review customer reviews, exchange payment details and enjoy the shopping and delivery process without risking any stolen details. E-commerce systems do not induce trust and confidence any more than the face-to-face approach does. Internet channels acting as go-betweens, suppliers may not guarantee quality and delivery of foreign sourced products to the customers. Since much of the purchases on the web are funded by credit cards or money wiring, this seriously enhances risk and cost of customers being hacked of credit card details, whether with or without the provision of digital security protocols to prevent phishing and tracking cookies. In an article, Frishberg (2000) has indicated that some 18 million people who have done shopping on the Net professed that they would have bought more if security was not an issue. He reiterated that another 20 million have avoided buying on the Web altogether because of security or privacy concerns. Finally, the implications would mean a further technological gap in appreciating and comprehending more advanced purchasing systems between mainstream have-gots and have-nots.

IV. HARDWARE AND SOFTWARE REQUIREMENT FOR THE NEW SYSTEM(S)

Courts would need to upgrade from an obsolete Windows NT system built in 1993 to Windows 2000 Professional, which is a mix of old and new. It carries on the legacy of Windows NT 3.0, 32-bit version, including most of NT's strengths and architecture, but it adds many new features (Windows 2000 Professional Basics, N.D.). Windows 2000 Professional is also known as Windows NT 5.0. It represents the convergence of technologies from Windows 95/98 and Windows NT

Workstation. Nearly all the functionality of NT 4.0 Workstation has been preserved with many of the tools having new locations and looks in Windows 2000 Professional (ibid). The most obvious changes lie in the consolidation of the administration tools into the MMC, a one-stop shopping place for Courts's management needs. The MMC lets the administrator manage the entire computer from one toolbar.

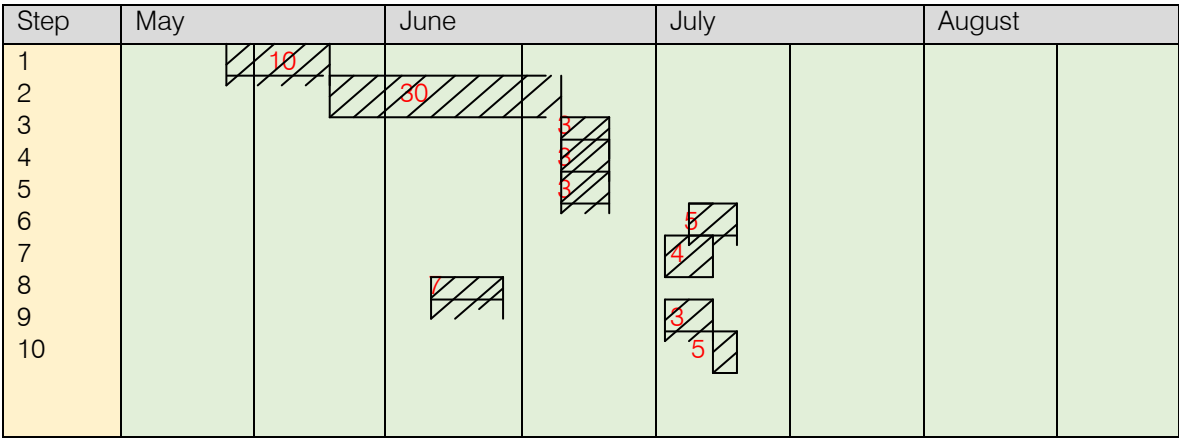
The following hardware and software requirements for 8 typical users in a division through the new installation of Windows NT-5.0:

WINDOWS 2000 Professional NT-5.0 Released 2000		
Hardware Requirements	Speed:	166 MHz or faster
	Hard Disk:	8 GB or higher
	Memory:	Intel Architecture-64/512 MB RAM or higher
	Drives:	DVD-ROM or better
	Sound:	Sound Blaster Live! Value card (circa 2000). Peripheral Component Interconnect (PCI) sound card
	Video:	XGA-IBM (1280 x 768) or higher-resolution monitor
	Controls:	100% compatible Microsoft keyboard/Mouse/ NetBIOS ports/COM & LPT
Software Requirements	Operating System:	Windows 2000 Professional / Windows NT Kernel /NTFS 3.0/Windows Shell/Windows API

V. DELIVERY OF SOLUTIONS

The Schedule for Delivery of Windows 2000 Professional.

The schedule for computer system as shown below;



a) *Discussions*

1. It will take 4 days for sales manager to provide requisition details to the Purchasing Order department and Purchasing Order department will take 6 days to process the order electronically and get it to Microsoft supplier. {Please check with warehouse to determine availability of stocks before ordering from Microsoft}.
2. Delivery of the computer system will take 30 days upon receipt of purchase order with pay option of instalments ranging from 30/60/90 days. Determine mode of shipment. Once the delivery has reached Courts head office, delivery order form has to be signed to acknowledge receipt of Windows 2000 Professional. All of the forms including purchase requisition, purchase order, delivery order, proforma invoice, sales invoice and relevant documents have to be disseminated to the warehouse, finance, purchase, sales and marketing departments for filing.
3. The Microsoft supplier needs 3 days to install the Windows 2000 Professional system.
4. It will take 3 days to train the department managers to use the system. Specialised training manuals are provided to staff.
5. Explaining the plans to the staff will take 3 days.
6. A rotation schedule must be produced for the staffs' training programme. This should take a day to

produce, with the training programme taking 5 days to complete.

7. Details of service options i.e., Service Packs (SP1, SP2, SP3, Administration Tools Pack etc...) will have to be entered onto the system and will take 4 days.
8. Electrical sockets and LAN access points will need to be fitted around the buildings and this will take 7 working days.
9. It will take the computer supplier 3 days to finally check the system.
10. It will take the Microsoft supplier 3 days to finally check the system component costs and labour rates, such as removal rate, run-out time, number of dressing passes, dressing feed rate, and by number of parts/dress. This will take 2 days to be inputted into the system.

b) *Rate Analysis (Dressing Feed Rate)*

Rate analysis is the process of accessing rates for unit of work or supply according to Chakraborti (1992). He expounds it as breaking down the activity into its fundamental components such as labour, overheads, taxes, agency profit and basic rate of individual material. Labour cost per part C_1 is the product of labour rate c_1 and the total cycle time t_t . Multiplying the total cycle time by the labour rate gives the labour cost/part. See formula below (Rowe, 2013- for latest edition).

$$C_1 = c_1 \cdot t_t = c_1 \cdot \left[\frac{(d_{ww} + d_{ss}) \pi d_w}{Q_w} + t_{so} + \frac{b_s n_d}{v_{fd} N_d} \right] \text{ Labour cost / part}$$

Source: W. Brian Rowe (2009). *Principles of Modern Grinding Technology*

The provided equation calculates the labour cost per part:

$$C_1 = c_1 \cdot t_t = c_1 \cdot [(d_{ww} + d_{ss}) \pi d_w / Q_w + t_{so} + (b_s n_d) / (v_{fd} N_d)]$$

Where:

• C_1	=	I.T. labour cost per part
• c_1	=	I.T. labour cost per unit time
• t_t	=	Total time taken for installation
• d_{ww}	=	Wire diameter
• d_{ss}	=	Spot diameter
• π	=	Mathematical constant pi (approximately 3.14159)
• d_w	=	Diameter of the wire
• Q_w	=	Setup speed
• t_{so}	=	Setup time
• b_s	=	Length of the seam
• n_d	=	Number of drops
• v_{fd}	=	Feeding speed
• N_d	=	Number of hardware parts

I.T. labour cost/part is affected by the total cycle time. It therefore depends on hardware and software

removal rate, run-out time, number of network dressing passes, "dressing feed rate", and by number of

parts/dress. The above analysis shows the importance of network dressing frequency and dressing time in cost per part. With many network parts/dress, the last term of Eqn (9.7) becomes negligible. With several network dressing operations per part, the last term becomes large. This underlying principle of optimising processes and achieving desired results can be applied to the computer industry perspective. This might relate to the speed of software updates or hardware releases. In this case, the ideal network "dressing feed rate" is to achieve a balance between the desired outcome (e.g., less rundown time, user satisfaction, faster executable files, better security patches etc...) while reducing negative complications (e.g., wastage of harddisk space, program errors, external attacks). If the network "dressing feed rate" is too fast, such as programming faster executable files, the system might crash due to lack of capacity. In a slow network "dressing feed rate", for example, if there are too infrequent update of security patches, the system might run a risk of intrusion from program bugs resulting in unstable performances. For hardware releases, this can include problematic issues such as hardware failures, driver issues and compatibility problems. This concept of rate analysis is perceived from the perspective of manufacturing, but its theoretical concepts can be adapted towards a computing situation.

Consider Example A: I.T. labour cost includes an overhead element of £75/h. The total cycle time is 100s.

I.T. labour cost per part is $C_1 = (\text{£}75 / 60 \times 60) \times 100 = \text{£}2.08$

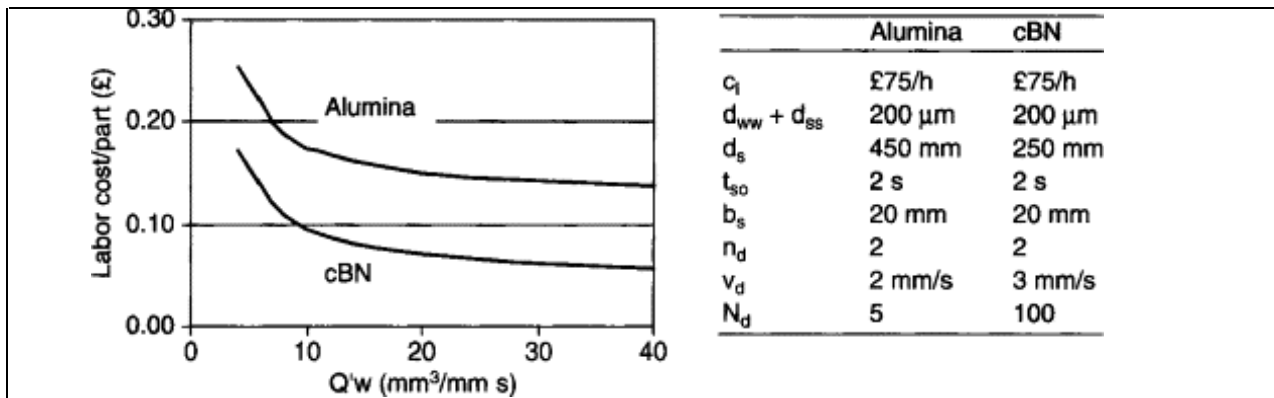


Fig. A: Effect of Hardware and Software Removal Rate on I.T. Labour Cost Per Part

Figure B. below shows that re-dress life can have an affect I.T. labour cost per part. In this case re-dress life is represented by network parts per dress. In this example, network dressing cost/part becomes negligible for more than 3 parts/dress. The figure shows the relationship between the network number of parts per dress and the I.T. labour cost per part for both alumina and CBN materials. The data points indicate an inverse relationship exists, as the number of network parts per dress increases, the

Figure A. below shows the effect of removal rates using I.T. labour rate with overheads based on an increased rate of £75/h. It can be seen that high removal rates reduce the I.T. labour cost per part. It also shows the effect of material removal rate (*computer hardware waste and redundant software applications reduction*) ($Q'w$) on I.T. labour cost per part for alumina (*operation codename for computer network materials*) and CBN (*operation codename for computer network materials*) grinding (*grinding here means churning out executable files, codes, programs etc...*). The data indicates that as $Q'w$ increases, the I.T. labour cost per part decreases for both alumina and CBN. The x-axis of the graph represents both the hardware and software material removal rate ($Q'w$) in $\text{mm}^3/\text{mm}\cdot\text{s}$, while the y-axis represents the I.T. labour cost per part in £. The graph shows two lines, one for alumina and one for CBN. Both lines show a decreasing trend, indicating that as the hardware and software material removal rate increases, the I.T. labour cost per part decreases.

- *Alumina*: The I.T. labour cost for alumina grinding starts at approximately £0.30/part at a $Q'w$ of 0 $\text{mm}^3/\text{mm}\cdot\text{s}$ and decreases to approximately £0.05/part at a $Q'w$ of 40 $\text{mm}^3/\text{mm}\cdot\text{s}$.
- *CBN*: The I.T. labour cost for CBN grinding starts at approximately £0.30/part at a $Q'w$ of 0 $\text{mm}^3/\text{mm}\cdot\text{s}$ and decreases to approximately £0.05/part at a $Q'w$ of 40 $\text{mm}^3/\text{mm}\cdot\text{s}$.

I.T. labour cost per part decreases for both materials, albeit the threshold of I.T. labour costs per part becomes quite irrelevant as the number of network parts per dress keeps increasing. This suggests a potential cost-saving opportunity through batch processing of security patches and increased efficiency as more network parts are processed at once until a certain threshold is reached.

- Computer Network Material: The figure compares two operation codenames that represent computer network materials: alumina and CBN.
- Network Number of Parts/Dress: The x-axis represents the number of I.T. network parts that can be processed in a single network "dress" (likely referring to software updates or hardware releases in batches).
- I.T. Labour Cost/Part: The y-axis represents the I.T. labour cost per part, measured in British pounds (£).
- Trend: The graph shows a clear inverse relationship: as the number of software updates or security patches increases, the I.T. labour cost per part decreases.
- Implications: The rate analysis implies that increasing the number of security updates processed in a single batch can lead to lower I.T. labour costs per part. This could be due to factors like reduced setup computer network time per part or increased efficiency with larger batches in coding executable files or security patches.

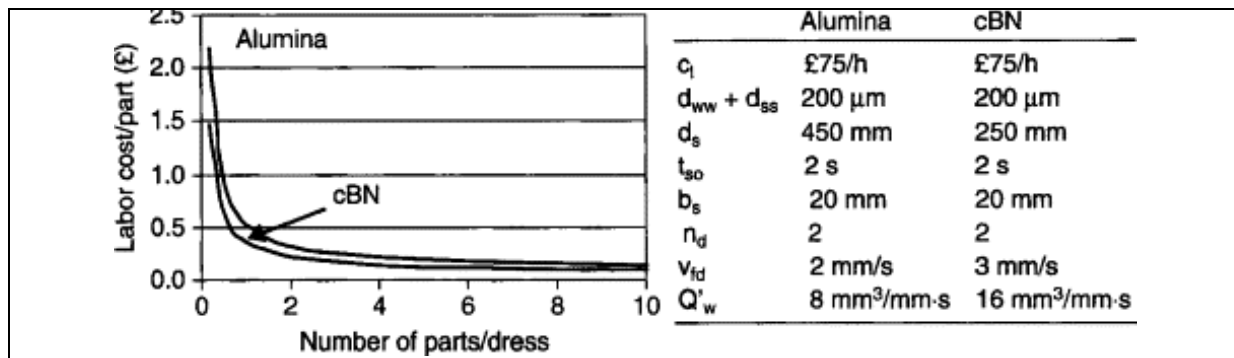


Fig. B: Effect of the Number of Network Parts Per Dress on I.T. labour Cost Per Part

Assuming Courts starts this plan in the middle of May, it can be completed by the beginning of July.

VI. CONCLUSION

Due to the intensity of competition and the changes of payment modes in a local and global context, there is a need to revamp the network system and improve the efficiency of the electronic and online transactions that go with it. The analysis uncovered a number of vulnerabilities, most of which were also demonstrated in practice using so-called exploit scripts. The network to be employed is the peer-to-peer configurative model. This network allows communication between every computer on the network with granted rights to access. Delivery for the Windows 2000 Professional NT 5.0 will be scheduled including checking the system component costs and doing a rate analysis, such as computing removal rate, run-out time, number of dressing passes, dressing feed rate, and by number of network parts/dress. Finally, many nations and organisations still face limitations and barriers to e-commerce. A substantial investment of resources towards know-how and technology awareness in e-commerce related issues such as cybercrime, and especially ethical and legal practices across international boundaries are essential.

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Disinformation and Democracy: Assessing the Threat of Fake News to Societal Trust, Security, and Global Competitiveness

By Szilard Szelpal

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Keywords: fake news, disinformation, media literacy, european green deal, digital propaganda, hungary, public opinion, survey research.

GJMBR-A Classification: JEL Code: D83



Strictly as per the compliance and regulations of:



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I. INTRODUCTION

In the past fifteen years, the global information environment has undergone a profound transformation. Public discourse is increasingly shaped by so-called "fake news" [1] and related forms of disinformation and misinformation [2]. The emergence of the so-called "post-truth" era- where emotional appeals and personal beliefs outweigh objective facts in influencing public opinion- has prompted growing concern across academic, political, and media spheres [3] [11]. The term "post-truth" was named the Oxford Dictionary's Word of the Year in 2016, reflecting the communicative climate surrounding events such as the Brexit referendum and the U.S. presidential election.

This phenomenon, however, extends far beyond media ethics or technological development [4]. It poses significant economic, societal, and national security challenges, demanding interdisciplinary attention [5]. This paper offers a comprehensive analysis of the definitions and typologies of fake news and

misinformation, their economic and social consequences [8], and their implications for national and international security [6] [7]. Special focus is given to emerging tensions between cities and states (including within the European Union) and their broader geopolitical and security relevance [7].

To better understand how Hungarian citizens engage with media content and assess their level of media literacy- particularly in relation to fake news- an online questionnaire was conducted as part of this study. The survey aimed to evaluate respondents' awareness of disinformation [12], their critical thinking habits when consuming digital content, and their capacity to distinguish between trustworthy and misleading information sources [10] [13].

Environmental sustainability [14] [15] and competitiveness [16] [17] are also examined as cross-cutting issues[9]. The analysis spans the period from 2010 to 2025 and focuses on Europe and the global landscape, supported by case studies from Hungary.

II. UNDERSTANDING THE NATURE AND IMPACT OF FAKE NEWS

Fake news, traditionally defined as deliberately misleading or entirely fabricated information presented in the guise of legitimate news, has long served as a tool for propaganda, supporting specific (often false) narratives. Historically, such misinformation was disseminated by powerful entities aiming to influence public opinion. However, the advent of the digital age, particularly the rise of social media post-2010, has dramatically transformed the landscape of fake news production and distribution. Today, virtually anyone can disseminate false claims to mass audiences via the internet and social platforms; even automated programs (bots) can publish misleading content en masse [20][26].

The motivations behind spreading fake news are diverse- ranging from political influence and economic gain (e.g., clickbait advertising revenue) to mere attention-seeking. Notably, the term "fake news" itself became a political tool in the latter half of the 2010s, with leaders like Donald Trump labeling unfavorable yet factual news as "fake," further complicating the term's meaning and public perception

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[21] [28]. Despite this, scholarly consensus suggests retaining the original definition: intentionally false or misleading news, distinguishing it from mere inaccuracies. This distinction leads to the categorization of disinformation as the deliberate spread of false information (encompassing fake news), while misinformation refers to the unintentional dissemination of incorrect information [22]. Additionally, malinformation involves the deliberate misuse of truthful information to cause harm or mislead—such as releasing sensitive facts out of context to discredit an individual. These categories help clarify the nature of various "fake news" phenomena.

Regarding specific genres of fake news, researchers have identified several types. In a widely cited study, Tandoc et al. (2018) delineated six primary categories:

1. News satire, which distorts through humor or exaggeration (e.g., articles from *The Onion* or *Hírcsárda* intended for entertainment but sometimes misconstrued as factual on social media);
2. News parody, similar to satire but often mimicking known news formats playfully;
3. fabrication, entirely invented news without any factual basis;
4. Manipulation, including deliberately altered or out-of-context images or videos that create misleading impressions;
5. Advertising or PR disguised as independent news, such as paid advertisements or propaganda presented as unbiased reporting;
6. Political propaganda, which may contain true or false elements but fundamentally aims to disseminate a manipulative political message (e.g., spreading conspiracy theories for political gain) [6].

These categories often overlap, and in practice, a disinformation campaign may employ multiple tactics. Nonetheless, this typology underscores that "fake news" encompasses more than entirely fabricated stories—it includes any media content that deceptively blends truth and falsehood to manipulate audiences.

III. ECONOMIC AND SOCIETAL CONSEQUENCES OF FAKE NEWS

The proliferation of fake news and disinformation is not merely a theoretical concern; it inflicts tangible economic and societal harm. Socially, one of the most severe impacts is the manipulation of public opinion and the erosion of trust. Fake news often aims to alter individuals' views or behaviors, aligning them with the political or economic interests of the disseminators. When audiences fall for false information, they effectively cede their capacity for independent, fact-based decision-making to disinformers—jeopardizing citizens' ability to make informed choices [22].

Moreover, the spread of misinformation exacerbates societal divisions: targeted fake news can reinforce existing prejudices, evoke strong emotional reactions (e.g., anger, fear), polarize public opinion, and undermine social cohesion [19][27].

The period from 2010 to 2025 offers numerous examples. During the 2016 U.S. presidential election campaign, political fake news spread on social media at unprecedented levels. Subsequent analyses revealed that widely shared false stories garnered more engagement than the most-read legitimate news articles [20]. These false narratives contributed to voter polarization and the deterioration of political discourse, ultimately diminishing democratic quality and public trust in governance. Similarly, in Europe, the Brexit campaign was accompanied by a deluge of fake news, including demonstrably false claims (e.g., that EU membership costs the UK £350 million per week, which would be redirected to the NHS upon leaving) that influenced public opinion [21] [28]. Decisions based on such misconceptions can lead to societal disillusionment when reality fails to meet the expectations set by false promises.

Disinformation also adversely affects communities' mental and physical well-being. A pertinent example is the COVID-19 "infodemic": the 2020 pandemic was accompanied by an overwhelming amount of misinformation, ranging from conspiracy theories (e.g., the virus was deliberately created) to pseudoscientific "miracle cures" (e.g., unwarranted use of certain medications) and anti-vaccine propaganda [18] [20] [29]. The World Health Organization (WHO) warned early in the pandemic that "we're not just fighting an epidemic; we're fighting an infodemic." The consequences were evident: many, influenced by false news, downplayed the virus's dangers, disregarded public health measures, or rejected vaccination. Consequently, some countries experienced lower vaccination rates, leading to preventable deaths and prolonged economic shutdowns. Thus, fake news can directly cost lives and health: it hampers effective pandemic response, heightens public fear and anxiety, and, in extreme cases, creates direct physical dangers (e.g., individuals ingesting toxic substances touted online as "cures") [27]. From a mental health perspective, continuous exposure to disinformation weakens the sense of security, complicates reality comprehension, and fosters frustration and helplessness—ultimately eroding faith in democratic institutions [21][22][28].

The economic damages are equally significant. Fake news undermines competitiveness and causes substantial financial losses, both directly and indirectly. A 2019 analysis quantified the global economic costs of disinformation. According to the study, fake news-induced stock market disruptions result in approximately \$39 billion in annual losses, with an additional \$17 billion

lost due to poor investment decisions stemming from misinformation [24] [25]. Furthermore, large corporations spend around \$9.5 billion annually to protect and restore their reputations following disinformation attacks [30]. Notably, the healthcare and environmental sectors incur significant expenses: combating anti-vaccine and climate change-denying fake news, along with addressing the resultant damages, requires approximately \$9 billion globally [18] [25] [30].

VI. METHODOLOGY

This research employs a mixed-method approach combining an extensive literature review with quantitative data analysis from two original surveys conducted in Hungary in early 2025. The primary aim was to investigate the perceived threat of fake news and its impact on public attitudes toward the European Green Deal, media literacy levels, and demographic variances in media engagement.

The first dataset- *Fake News and Disinformation Survey*- targeted participants' general attitudes toward misinformation, their evaluation of the danger posed by fake news across various domains, and their media consumption habits. The second dataset- *European Green Deal and Misinformation*- explored how respondents perceived disinformation as a threat to EU climate policy initiatives and sustainability frameworks.

A total of 370 respondents participated in the surveys, collected via online forms. The sample, while limited, included a diverse demographic composition based on age, education level, residence type (urban/rural), and media usage patterns.

Data were analyzed using SPSS 28. The following statistical tools and procedures were applied:

- *Descriptive Statistics*: Frequencies, means, and standard deviations were used to summarize the respondents' demographic characteristics and overall responses.
- *Chi-square Tests (χ^2)*: Used to examine the association between categorical variables (e.g., education level and perceived risk of disinformation).
- *Pearson Correlation Coefficient (r)*: Applied to measure the strength and direction of the relationship between political news consumption frequency and perceived fake news threat to the European Green Deal.
- *One-way ANOVA*: Conducted to assess statistically significant differences in risk perception across different demographic groups.

The chi-square statistic is defined as:

$$\chi^2 = \sum [(O_i - E_i)^2 / E_i]$$

Where O_i is the observed frequency and E_i is the expected frequency.

Pearson's correlation coefficient is calculated as:

$$r = \frac{\sum [(x_i - \bar{x})(y_i - \bar{y})]}{\sqrt{[\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2]}}$$

Where x_i and y_i are the individual data points and \bar{x} and \bar{y} are their respective means.

The Pearson correlation coefficient (r) was used to measure the strength and direction of the linear relationship between two variables. The value of the Pearson correlation can range from -1 to +1, where a value of 0 indicates no linear relationship. The correlation coefficient can be calculated using the following formula:

$$r = \frac{\sum [(x_i - \bar{x})(y_i - \bar{y})]}{\sqrt{[\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2]}}$$

where x_i and y_i are the individual data points, and \bar{x} and \bar{y} are the means of the variables.

V. RESULTS

a) Demographic Characteristics

The majority of respondents (62%) were in the 24-35 age group. The gender ratio was balanced (55% female, 45% male). 40% of respondents lived in the capital, 30% in a city with county rights, 20% in a small town, and 10% in a village. According to the highest level of education, respondents with a bachelor's degree were the majority (60%), followed by those with a master's degree (25%).

b) Perceived Danger of Fake News

Respondents generally rated the danger of misinformation as high (average: 4.4 on a scale of 5). The highest ratings were given to general dangerousness (82% on a scale of 4-5), the impact on individual decisions (75%) and the impact on politics (70%). The impact on democracy was rated somewhat lower (65%). The impact of Fake News on the European Green Deal was rated by respondents as 3.2 on average, which is lower compared to other areas (48% on the 4-5 scale).

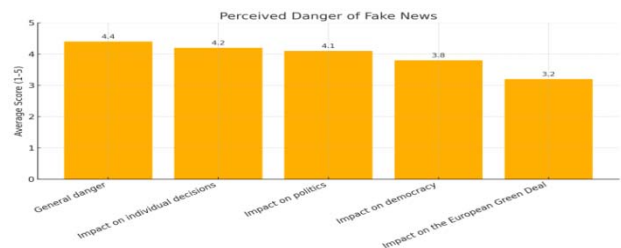


Fig. 1: Distribution of Perceived Danger of Fake News by News Source

Fig. 1 above illustrates the perceived danger of fake news based on the respondent's primary news source. Users of scientific journals rated the danger highest (Mean = 4.3), followed by traditional media (3.6), and Facebook News Feed users rated it lowest (2.9).

Table 1: Descriptive Statistics of Perceived Risk of Fake News

Criteria	Mean (Scale 1-5)	Percentage of 4-5 Responses
General Dangerousness (Q15)	4.4	82%
Impact on Individual Decisions (Q16)	4.2	75%
Impact on Politics (Q17)	4.1	70%
Impact on Democracy (Q18)	3.9	65%
Impact on European Green Deal (Q19)	3.2	48%

c) Demographic Variations in Risk Perception

Significant differences in the assessment of the impact on the Green Deal were shown by demographic factors. Those with a master's degree rated the risk significantly higher (average: 4.1) compared to those

with a bachelor's degree (average: 2.8). Residents of the capital rated the risk lower (average: 2.7) than those living in rural regions (average: 3.8). Those who use social media hourly rated the risk higher (average: 4.1) than those who use it for 1-2 hours a day (average: 2.9).

Table 2: One-way ANOVA results by demographic groups for questions: Q15-Q19

Question No.	F statistic	P value
General Dangerousness (Q15)	3.345	.002
Impact on Individual Decisions (Q16)	2.452	.034
Impact on Politics (Q17)	2.567	.024
Impact on Democracy (Q18)	1.342	.344
Impact on European Green Deal (Q19)	2.674	.044

d) Media Source Comparison and Impact on the Green Deal

The type of news source also influenced respondents' opinions on the impact on the Green Deal. Those who use the Facebook news feed rated the risk lower (average: 2.9), while those who use the online interfaces of traditional media rated it higher (average: 3.6). Those who read scientific articles rated the impact on the Green Deal the highest (average: 4.3).

e) Support for countering Fake News

The vast majority of respondents agreed on the need to take action against Fake News. Social action was supported by 85%, legislative regulation by 78% and education by 92%. Opinions were divided on the role of artificial intelligence (AI). 63% of respondents believe that AI will increase the spread of Fake News, while 41% believe that it offers an opportunity to filter out Fake News.

f) Statistical Correlations

The analysis of the Pearson correlation coefficient showed a strong positive correlation between the risk of the Green Deal and the consumption of political news ($r=0.72$, $p=0.002$). This means that the more political news someone consumes, the more likely they are to rate the impact of Fake News on the Green Deal as high. The chi-square test showed a significant relationship between education and climate policy concern ($\chi^2(4)=12.7$, $p=0.013$).

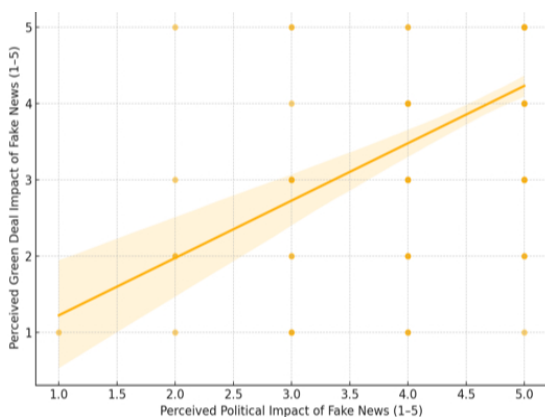


Fig. 2: Correlation Between Political News Perception and Green Deal Risk ($r = 0.53$).

Caption: The scatter plot demonstrates a positive correlation between the amount of political news consumed and the perceived risk of Fake News impacting the Green Deal (Pearson's $r = 0.72$).

VI. COMPARATIVE ANALYSIS

a) Comparison of Demographic Groups

Based on the data, it can be stated that those with higher education and intensive users of social media are more likely to consider Fake News dangerous

to the Green Deal. In contrast, residents of the capital are less likely to consider the phenomenon dangerous, which may indicate that they are better informed or less influenced by misinformation compared to the rural population.

b) Comparison of News Sources

The differences between news sources highlight that those who read scientific articles are more likely to recognize the danger of Fake News on the Green Deal than those who use social media. This suggests that scientific sources result in a more critical approach and thorough information.

VII. DISCUSSION

The results of this study support the growing academic consensus that fake news and disinformation represent a multifaceted threat to democratic governance, economic stability, and the efficacy of long-term public policy- such as climate action through the European Green Deal. The survey findings underscore the variance in perceived threat levels based on demographic and behavioral factors. Notably, those with higher levels of education and more frequent political news consumption were more likely to view fake news as a significant risk to climate-related initiatives. This supports prior research suggesting that media literacy and cognitive engagement are critical mediators of disinformation susceptibility [4] [5].

An important contribution of this research lies in the comparative analysis of news sources. Respondents who accessed information via scientific articles demonstrated the highest levels of awareness regarding the disinformation threat- consistent with findings by Guess, Nyhan & Reifler (2020), which emphasized the role of high-quality information in democratic resilience. Meanwhile, reliance on social media- particularly platforms like Facebook- was associated with lower concern, a pattern previously observed by Vosoughi, Roy & Aral (2018) in their study on virality dynamics. On virality dynamics. observed by Vosoughi, Roy & Aral (2018) in their study on virality dynamics.

The observed correlation between political news consumption and risk perception regarding the Green Deal ($r = 0.72$, $p < .01$) further illustrates how disinformation exploits politically charged narratives. This aligns with Lazer et al. (2018), who argued that fake news thrives in polarized environments where ideological filters distort interpretation.

A novel element of this study is its integration of climate policy into disinformation discourse. The inclusion of Green Deal-related questions highlights that misinformation does not only impact elections or public health but also influences long-term sustainability goals. The lower risk perception among urban residents may reflect either a higher media literacy rate in metropolitan

areas or an overconfidence in institutional information sources, warranting further research.

VIII. CONCLUSION

This study confirms that fake news and disinformation are not merely media pathologies- they are systemic risks to societal trust, institutional legitimacy, and democratic policymaking. The empirical findings based on Hungarian public opinion suggest that the battle against disinformation must incorporate robust educational strategies, legislative safeguards, and platform accountability mechanisms. Particularly, misinformation surrounding environmental and climate policies such as the European Green Deal demonstrates how even future-oriented governance is vulnerable to distortion.

A strong, evidence-based media literacy curriculum- targeted across all age and education groups- is necessary to build long-term resilience. In parallel, transnational cooperation among EU member states, civil society, and digital platforms is vital to maintaining a balanced information ecosystem that supports public engagement rather than erodes it.

In the age of algorithmic amplification and AI-generated content, the imperative to protect the information commons has never been greater. By addressing fake news not only as a communication issue but as a governance and security challenge, this research adds an interdisciplinary dimension to a globally relevant debate.

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Continuous Improvement and Performance of Water Projects in Machakos County, Kenya

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Abstract- Over the past two decades, national governments, bilateral agencies, and devolved authorities have made significant efforts to improve access to clean and safe water through various national and community-based water projects. To enhance the effectiveness and sustainability of these initiatives, many institutions have integrated continuous improvement strategies into their results-based management frameworks. Despite these efforts, water projects continue to face performance issues, including delays and inefficiencies. This study aims to assess the effect of continuous improvement on the performance of water projects in Machakos County, Kenya. The research employs the pragmatism research paradigm and utilizes both correlational and descriptive cross-sectional survey designs. It focuses on 70 water projects within Machakos County, targeting beneficiaries represented by members of the Water Management Committee, Ministry of Water employees, and project managers. Slovin's Formula was used to determine the sample size, leading to the selection of 216 respondents through stratified random sampling. This sample was divided into three strata: Ministry of Water employees, project managers, and Water Management Committee members.

Keywords: *continuous improvement, project performance, water projects.*

GJMBR-A Classification: *JEL Code: O22, Q25, H54*



Strictly as per the compliance and regulations of:



Continuous Improvement and Performance of Water Projects in Machakos County, Kenya

Richard Orengo Odhiambo^α & Charles M Rambo^σ

Abstract- Over the past two decades, national governments, bilateral agencies, and devolved authorities have made significant efforts to improve access to clean and safe water through various national and community-based water projects. To enhance the effectiveness and sustainability of these initiatives, many institutions have integrated continuous improvement strategies into their results-based management frameworks. Despite these efforts, water projects continue to face performance issues, including delays and inefficiencies. This study aims to assess the effect of continuous improvement on the performance of water projects in Machakos County, Kenya. The research employs the pragmatism research paradigm and utilizes both correlational and descriptive cross-sectional survey designs. It focuses on 70 water projects within Machakos County, targeting beneficiaries represented by members of the Water Management Committee, Ministry of Water employees, and project managers. Slovin's Formula was used to determine the sample size, leading to the selection of 216 respondents through stratified random sampling. This sample was divided into three strata: Ministry of Water employees, project managers, and Water Management Committee members. Data collection involved secondary data from annual reports of the Ministry of Water in Machakos County and primary data from semi-structured questionnaires and key informant interviews. Qualitative data from interviews were analyzed thematically, while quantitative data were examined using descriptive statistics and inferential techniques such as correlation and regression analysis. Correlation results indicated that there is a positive linear association between selection of continuous improvement and water projects performance in Machakos County ($r=0.225$, $p\text{-value}=0.005$). Regression results showed that continuous improvement has a positive influence on the performance of water projects Machakos County, Kenya ($\beta_1=0.932$, $p\text{-value}=0.000$). From the findings, the study recommends that key stakeholders especially end users should be involved in continuous improvement through feedback mechanisms, joint performance reviews, community sessions, and site visits. The community sessions would solicit inputs on aspects that need improvement including water quality, management systems and operation processes. The community engagement sessions would provide an opportunity to review progress made and share lessons from monitoring reports.

Keywords: *continuous improvement, project performance, water projects.*

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I. INTRODUCTION

The performance of water projects, particularly in meeting scope, time, and budget constraints, is a significant challenge for managers of projects funded by government bodies and international organizations like the World Bank, INGOs, and the UN (Bassanetti, 2021). These projects frequently encounter issues such as unexpected technical problems, logistical hurdles, and variable financial resources, leading to delays and cost overruns. Additionally, aligning project goals with community needs and managing stakeholder expectations complicates execution further (Arias & Friðriksdóttir, 2022). The complexity of water projects, requiring extensive planning, coordination, and regulatory compliance, intensifies these challenges. According to Lainjo (2019), Results-Based Management (RBM) enhances project performance by emphasizing accountability, transparency, and efficiency throughout the project lifecycle, with continuous improvement being a key component.

Continuous improvement involves systematically evaluating and revising project processes, strategies, and practices based on performance data and feedback to enhance efficiency and effectiveness. Rahman and Hossain (2020) observed that continuous improvement practices played a crucial role in enhancing project performance in Bangladesh. Projects that incorporated continuous improvement methodologies showed higher levels of success in terms of meeting deadlines, staying within budget, and achieving desired outcomes. The research highlighted that systematic improvements and regular performance evaluations are key to achieving superior project results. In addition, Khan and Shah (2019) indicated that continuous improvement strategies significantly enhance project success in Pakistan's construction industry. These strategies, including quality management practices and iterative feedback mechanisms, led to improvements in project efficiency, cost management, and overall project quality. In Ghana, Asante and Osei (2021) assert that continuous improvement practices were instrumental in enhancing the performance of development projects in Ghana.

In Kenya, Chirchir and Koros (2021) assert that continuous improvement initiatives, including structured training programs and feedback mechanisms, signi-



ificantly enhance staff performance in Baringo County. Specifically, regular seminars and workshops led to notable improvements in employee productivity, effectiveness, and job satisfaction. In addition, Abdill (2017) argues that continuous improvement practices, such as iterative process enhancements and performance evaluations, positively impact project performance in Kenyan county governments. Also, Mwangi and Ndungu (2019) demonstrated that continuous improvement practices, including regular assessments and process optimizations, significantly boost project performance in Kenyan NGOs. The implementation of best practices and systematic feedback loops led to enhanced project delivery, increased stakeholder satisfaction, and greater overall effectiveness. Continuous improvement contributed to better project outcomes by addressing inefficiencies and adapting strategies based on performance data.

The performance of water projects in Machakos County presents a mixed picture, reflecting both successes and challenges (Nzomo, 2022). Some projects have effectively improved access to clean water, while others struggle with issues like poor quality, cost and time overruns, failure to meet objectives, and lack of sustainability (Muema & Ngugi, 2021). These problems often arise from inadequate planning, limited resources, and insufficient project management capacity. Integrating continuous improvement, a key element of Results-Based Management (RBM), is crucial for addressing these issues. It provides a structured approach to setting clear objectives, monitoring progress, and evaluating outcomes through established indicators (Kosgei, 2021). By embracing continuous improvement, Machakos County can improve accountability, transparency, and efficiency in water project implementation, leading to better resource utilization and achievement of project goals in a sustainable and timely manner.

II. STATEMENT OF THE PROBLEM

In Results-Based Management (RBM), continuous improvement plays a crucial role in water projects by providing measurable criteria to evaluate the effectiveness and impact of water initiatives (Arias & Friðriksdóttir, 2022). Continuous improvement enhances the performance of water projects by fostering ongoing evaluation and refinement of processes. According to Lainjo (2019) it helps identify and address inefficiencies, leading to better resource management and cost reduction. Khan, Begum, and Razak (2020) indicate that by implementing feedback mechanisms and incorporating best practices, continuous improvement ensures that water projects are more effective, sustainable, and responsive to community needs. However, Chirchir and Koros (2021) argue that continuous improvement can be resource-intensive,

requiring significant time and financial investment. They also point out that frequent changes may encounter resistance from employees, disrupting workflow and morale. In addition, Abdill (2017) suggests that the focus on incremental changes might overshadow the need for addressing fundamental issues or pursuing larger innovations.

In Machakos County, 67 percent of water projects encounter issues such as stagnation, cost overruns, and time delays, and often cease to function immediately after donors and contractors hand them over to the communities (Lillian & Mutiso, 2019). These projects frequently break down due to a shortage of spare parts, the inability of community water management committees to cover operational costs, and inadequate maintenance and operational oversight. Furthermore, Kosgei (2021) noted that only 60% of stakeholders expressed satisfaction with the completed projects. This dissatisfaction arises because many projects fail to deliver on their goal of providing safe water, ultimately becoming social and environmental hazards rather than sustainable solutions for the communities they were meant to benefit.

Various studies have examined the selection of continuous improvement across different project contexts globally. For instance, Rahman and Hossain (2020) examined the role of continuous improvement practices in project performance in Bangladesh; Khan and Shah (2019) conducted a study on the impact of continuous improvement strategies on project success in Pakistan's construction industry while Asante and Osei, R. (2021) looked at enhancing project performance through continuous improvement among development projects in Ghana. Despite these insights, it's important to recognize that each country's unique macroeconomic conditions and legal frameworks can influence project outcomes and the effectiveness of continuous improvement. Furthermore, these studies have primarily focused on infrastructure development and community-based water projects, potentially limiting their applicability to other types of projects and sectors.

In Kenya, Chirchir and Koros (2021) examined the impact of continuous improvement initiatives on staff performance in Baringo County; Abdill (2017) studied continuous improvement and its impact on project performance in county governments in Kenya; and Mwangi and Ndungu (2019) looked at the effectiveness of continuous improvement practices in enhancing project performance in Kenyan NGOs. However, these studies were limited to construction projects and development projects by NGOs. Different types of projects have different project objectives, resources requirements and technical expertise. This study therefore sought to answer the research question: how does continuous improvement influence the performance of water projects in Machakos County?

The researcher sought to test the following null hypotheses:

H_{11} : There is no significant association between continuous improvement and the performance of water projects in Machakos County, Kenya.

III. LITERATURE REVIEW

a) *Continuous Improvement and Performance of Water Projects*

Abdill (2017) investigated the impact of continuous improvement on the performance of county government projects through a descriptive research survey design. The study encompassed a large population of 2,028 participants, including 28 project heads and 2,000 project beneficiaries. Utilizing a stratified sampling method, the research focused on a sample of 204 individuals. Data collection was achieved using a combination of questionnaires and interview guides to gather primary data. The study's findings highlighted that continuous improvement practices enable project managers to develop higher-quality projects while reducing costs, thus effectively meeting project objectives and enhancing overall performance. This demonstrates the practical benefits of ongoing improvement efforts in project management.

Odhiambo (2021) conducted a study to examine how continuous improvement and learning impact performance of water projects run by the county governments' within Machakos County. Moreover correlational research approach was utilized. The study population was 361 respondents comprising beneficiaries of the water projects, project managers, employees working with the ministry of water and employees in the Tana -Athi Water Service board. The study employed semi-structured questionnaires to obtain primary data. Moreover, questionnaires in this study were disseminated using the DOPU technique, and face-to-face interviews were conducted for key informant interviews. The study found that continuous learning as well as improvement impacts county governments' water projects' performance to a large extent.

In Kenya, Njagi, Muna and Njoroge (2021) assessed the role of continuous improvement in resource mobilization on water supply management in Murang'a County. Additionally, the researcher used descriptive study approach. Target population in Murang'a County consisted of beneficiaries or local stakeholders, personnel of water management and supply organizations, County and National Government officials from Ministry of Water, and employees of non-state actors dealing with water, totaling 89,415. A total of 225 people took part in this study. This study used questionnaire to collect qualitative and also quantitative data. For data analysis, SPSS version 25 was employed. The studies demonstrated that constant resource

mobilization leads to significant improvements in water supply management.

Chirchir and Koros (2021) conducted an investigation into how continuous improvement initiatives affect staff performance within Baringo County. Employing a descriptive research approach, the study utilized a questionnaire to collect data from 14 senior employees and 57 middle-level managers. The analysis was carried out using both inferential and descriptive statistical methods. The findings indicated that the county government's training programs, provided through a series of seminars and workshops, had a substantial positive impact on staff performance. This highlights the importance of structured training and development efforts in enhancing employee effectiveness. The study suggests that well-organized training initiatives are crucial for improving overall organizational performance and achieving better results in county government operations.

b) *Theoretical Framework*

The RBM theory started in the mid-1980s with the Australian government, after which in the 1990s it spread to other organizations, including the OECD. The RBM theory involves orienting all use and action of resources towards achieving demonstrable and clearly defined results (Dempster, 2017). The RBM improves accountability and openness by letting initiatives to continue to collaborate and reduce waste and duplication. Good planning and M, M&E are interconnected procedures that can significantly improve investment projects and programs' efficacy. Good planning ensures that resources are allocated and subsequent execution is concentrated on essential outcomes. Try and Radnor (2017) contend that proficient monitoring and evaluation facilitate the assessment of progress towards achieving goals and enable learning from previous experiences, thereby ensuring that future projects contribute more effectively to development outcomes.

Results-based management seeks to drive substantial changes in the operations of public and private sector entities, such as institutions, projects and agencies. Its main objective is to improve performance and achieve more effective outcomes. RBM also attempts to manage interventions while ensuring relevance, efficiency, effectiveness, and impact, among other quality criteria (Dempster, 2017). Management improvement refers to management learning and decision-making processes and is one of the drivers of result-based management. Another motivator is performance reporting, which can help inform and enhance resource allocation (Rivenbark, 2016). The RBM has six distinct components: stakeholder participation/situational analysis; defining anticipated results; managing and identifying risks; gathering performance information, selecting performance

indicators and performance reporting, learning, and corrective actions.

Results-Based Management (RBM) theory elucidates the influence of continuous improvement on the performance of water projects in Machakos County by emphasizing a structured approach to achieving specific, measurable results. In RBM, continuous improvement plays a crucial role by systematically evaluating project progress, identifying performance gaps, and implementing iterative enhancements based on real-time data and stakeholder feedback. For water projects in Machakos County, this means using performance metrics to track effectiveness in delivering clean water, assessing the impact of various

interventions, and adjusting strategies to address emerging challenges. By focusing on results and continuously refining practices, RBM ensures that water projects are more efficient, responsive, and capable of meeting their goals, thereby improving overall project outcomes and sustainability in the region.

c) *Conceptual Framework*

The study sought to assess the influence of continuous improvement on performance of water projects in Machakos County, Kenya. As shown in Figure 1, the dependent variable was performance of water projects and the independent variable was selection of key performance indicators.

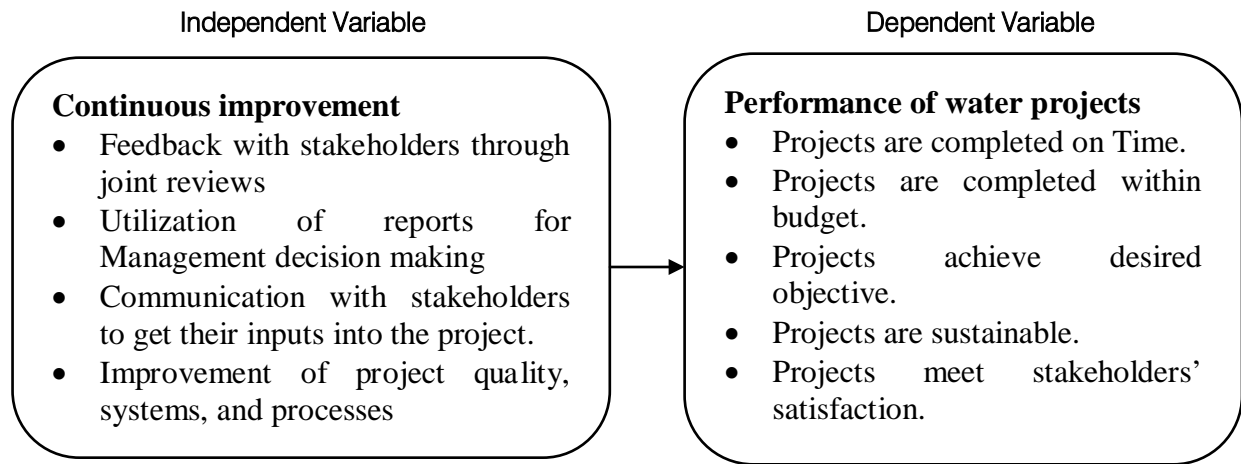


Figure 1: Conceptual Framework

IV. RESEARCH METHODOLOGY

This study adopted the pragmatism paradigm and combined qualitative and quantitative research approaches. In addition, the study employed a correlational approach and a descriptive cross-sectional survey approach. The target population comprised of 70 water projects located within Machakos County. The unit of observation included the beneficiaries of the water projects represented by five members of the Water management committee, Ministry of water employees, and project managers in Machakos County. Water projects comprise five members of the water management committee, and hence the total members in the 70 water projects were 350 members. The project managers were 70, and the Ministry of water employees was 54. The target population therefore, consisted of 474 individuals.

Sample size determination in this study adopted the Slovin's Formula. This formula was adopted as it puts into consideration margin of error, target population and sample size.

$$n = \frac{N}{1 + NE^{-2}}$$

Where:

N =entire population

n =sample size

E =Error margin (0.05)

$$n = \frac{474}{1 + (474 * 0.05^2)} = 216$$

The study employed stratified random sampling to select 216 respondents and divided into smaller sub-groups referred to as strata which had three groups of respondents, including the ministry of water employees, project managers and water management committee members.

Table 1: Sample Size

Category	Target Population	Sample Size
Ministry of water personnels	54	25
Project managers	70	32
Water management committee members	350	159
Total	474	216

The study used primary data collected through semi-structured questionnaires and in-depth interviews with key informants. A preliminary pilot study was conducted to evaluate the reliability and validity of the research instruments. Project managers and members of the water management committee took part in the pre-test, including 21 respondents (10% of sample size) from Makueni County. Makueni County was used to test the research instruments due to proximity to Machakos County and similarity in characteristics including culture, environment, and water needs.

The research instruments generated both qualitative and quantitative data. Qualitative data from key informant interviews and unstructured questionnaires was analysed thematically. The quantitative data analysis was done using both inferential and descriptive statistics with the help of Statistical Package for the Social Sciences (SPSS Version 25). Descriptive statistics included mean, standard deviation, percentages, and frequency distribution. Inferential analysis was conducted using Pearson correlation coefficient analysis and univariate regression analysis. The univariate regression models were employed to examine the relationship between the study variables. The regression model used was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where;

Y = County governments' water projects Performance;

β_0 = Intercept (Constant);

β_1 = Coefficients of determination;

X_1 = Continuous improvement; and

ε = Error term

V. RESEARCH FINDINGS AND DISCUSSIONS

Out of 216 questionnaires that were administered, the researcher obtained 157 responses, conducted 18 KII with staff from the ministry of water and 23 KII with project managers. This represents a response rate of 91.67%. Babbie (2017) argues that 50% response rate is generally considered good for analysis, inferences as well as reporting purposes whereas 70% response rate is considered excellent. Therefore, in this study response rate of 91.67% is adequate for conducting analysis as well as making inferences. There was 8.33% non-response rate, which came as results of unavailability of some participants.

a) Performance of Water Projects

In this study, the performance of water projects served as the dependent variable, assessed through indicators such as projects completed on time, within budget, achieving objectives, sustainability, stakeholder satisfaction, and managing environmental and social impacts. A five-point Likert scale was employed to measure respondents' level of agreement with statements concerning the indicators within Machakos County. With mean of 4.089, participants agreed that sometimes they have cost overrun when implementing water projects in Machakos County. Additionally, they agreed that there are few complaints on the quantity of water supplied in the county government and they have experienced cost over runs at completion of some county water projects as indicated by a means of 4.051 and 4.038. participants also agreed that County water projects are completed within schedule and that there are several complaints on the quality of the water supplied in the county government as shown by means of 3.981 and 3.822, respectively. Respondents expressed overall satisfaction with the quality of water supplied in their communities, as indicated by an average rating of 3.669. However, they also reported experiencing delays in the completion of some county water projects, with a mean score of 3.592. Respondents expressed a neutral opinion towards the services provided by county water projects, as indicated by a mean score of 2.803. Similarly, their views on the cost-effectiveness of these projects were neutral, with a mean rating of 2.745.



Table 2: Performance of Water Projects

Statements	Mean	Std. Deviation
County Water projects are completed within schedule	3.981	0.711
I have experience delay in completion of some county water projects	3.592	0.891
The costs for water projects in my community is always within the budget	2.745	1.092
I have experience cost over runs at completion of some county water projects	4.038	0.275
Sometimes we have cost overrun when providing water supply services in the county	4.089	0.414
I am satisfied with the services of county water projects in my community	2.803	1.083
I am satisfied with quality of the water supplied in my community	3.669	0.812
There are several complaints on the quality of the water supplied by the county government	3.822	0.693
There are few complaints on the quantity of the water supplied in the county government	4.051	0.372
Composite mean and composite standard deviation	3.643	0.705

b) *Continuous Improvement and Performance of Water Projects*

The respondents were asked to indicate their extent of agreement or disagreement with different statements used in measuring continuous improvement of water projects in Machakos County. According to the findings, shown in Table 2, the respondents agreed that monitoring reports and performance reviews inform the resource allocation for county water projects and management decisions of the water project in the county as shown by a mean of 4.178. In addition, respondents agreed that the county government use lessons from ongoing water projects to improve the design of new projects with a mean of 4.147. Further, the respondents agreed with a mean of 4.127 that performance reviews are used to gauge and compare the performance of water projects. Prioritizing the integration of monitoring and performance evaluation processes into project management practices is essential for driving informed decision-making, fostering innovation, and maximizing the impact of water projects on community development.

They also agreed that performance reviews and reports lead to improvements of implementation of water projects when such lessons from the project are communicated in a timely manner with key stakeholders as shown by a mean of 4.096. Moreover, they agreed

with a mean of 4.026 that the management of water projects ensure improvements made to the performance of the water project are communicated timely. This proactive approach to knowledge dissemination fosters transparency, accountability, and continuous improvement within the project management framework, ultimately contributing to enhanced project outcomes and stakeholder satisfaction. Therefore, prioritizing timely communication of performance-related insights and improvements is essential for fostering a culture of learning, driving organizational agility, and maximizing the impact of water projects on the community.

The respondents further agreed with a mean of 3.631 that they are satisfied with the level of continuous improvement in their water projects. Nonetheless, they disagreed with a mean of 2.478 that as stakeholders they are effectively involved in the process of continuous improvement in the water projects. This disconnect could hinder the identification and implementation of relevant improvement measures, thereby limiting the project's ability to address evolving challenges and optimize outcomes. Effective stakeholder involvement is crucial for fostering a culture of continuous improvement, as it enables diverse perspectives, insights, and feedback to inform decision-making and drive meaningful change.

Table 3: Continuous Improvement

Statements	Mean	Std. Deviation
Performance reviews are used to gauge, compare, and analyse the performance of water projects	4.127	0.334
Performance reviews inform management decisions of the water project	4.178	0.384
Monitoring reports and performance reviews leads to improvements of implementation of water projects	4.096	0.372
Performance reviews and reports inform the resource allocation for water projects	4.178	0.474
As a stakeholder I am involved in the process of continuous improvement of water projects	2.478	0.910
The management of water projects ensure timely communication of lessons from the project reports	4.096	0.295
The management of county water projects ensure timely communication of changes made to improve performance of the water project	4.026	0.252
The county government use lessons from ongoing water projects to improve design of new projects	4.147	0.355
Am satisfied with level of continuous improvement in county water projects	3.631	0.736
Composite mean and composite standard deviation	3.884	0.457

The key informants revealed that continuous improvement helps to identify project weakness, risks and develop mitigation measures to overcome the challenges in the project. The county government gets feedback from the stakeholders concerning the performance of the project and uses this information to improve projects. This use of progress information by key stakeholders leads to continuous improvement of performance which then leads to more sustainable satisfaction of the beneficiaries with the quality and quantity of water services. Moreover, continuous improvement assists in reducing the cost of designing new projects since documented lessons learnt from previous projects are used to improve new designs. Continuous improvement promotes timely communication of the changes made to the projects, better engagement with stakeholders, better designs for future project and effectiveness of ongoing projects. Continuous improvement also provides an enabling environment for the county government to improve quality, quantity, and scale of water services to the people of Machakos County.

"Continuous improvement helps in identifying project weaknesses, risks, and developing mitigation measures to overcome challenges. The county government uses stakeholder feedback to enhance project performance, resulting in more sustainable satisfaction with water services. Furthermore, documented lessons learned contribute to reducing the cost of designing new projects and promoting timely communication, better stakeholder engagement, and improved project effectiveness" KII13

The key informants revealed that the county government ensures continuous improvement in the

delivery of water projects by collecting views from beneficiaries on the quality and quantity of water services offered. This regular consultation with the project beneficiaries and key stakeholders provides timely feedback on the performance of water projects which in turn contributes to the broader objectives and goals of the county integrated development plans. Some of the consultations are done by frequently visiting the projects site with key stakeholders to interact with beneficiaries. Moreover, the key informants revealed that the county government ensures continuous improvement in the delivery of water projects by using performance reviews to collect feedback from beneficiaries and communicate changes made in the project designs.

"We ensure continuous improvement in water project delivery by actively seeking feedback from beneficiaries regarding service quality and quantity. Regular consultations and site visits with stakeholders provide valuable insights for project performance enhancement, aligning with broader county development objectives" KII08

c) Correlation Analysis

Correlation analysis was used to examine the relationship between continuous improvement and water project performance in Machakos County. As shown in Table 4, the findings showed a positive linear association between selection of continuous improvement and water projects performance in Machakos County ($r=0.225$, $p\text{-value}=0.005$). Therefore, the results imply that as the continuous improvement increases, there is a corresponding increase in Water Projects performance in Machakos County.

Table 4: Correlation Coefficients

		Performance of Water Projects	Continuous Improvement
Performance of Water Projects	Pearson Correlation	1	
	Sig. (2-tailed)		
	n	157	
Continuous Improvement	Pearson Correlation	.550**	1
	Sig. (2-tailed)	.000	
	n	157	157

d) Regression Analysis

To evaluate the influence of continuous improvement on water project performance in Machakos County, univariate analysis was conducted. The null hypothesis for this analysis was:

H_01 : There is no significant relationship between continuous improvement and performance of water projects in Machakos County, Kenya.

A summary of the model analyzing the relationship between continuous improvement and water project performance is provided in Table 5. The R-squared was 0.302, suggesting that about 30.2% of

variability in water projects performance, dependent variable, can be elucidated by independent variable (continuous improvement) included in the model. This suggests that the selection of continuous improvement can account for 30.2% of the performance variation observed in water projects within Machakos County, Kenya.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.550 ^a	.302	.298	.36426

a. Predictors: (Constant), Continuous Improvement

The ANOVA results examining the relationship between continuous improvement and water project performance are presented in Table 6. From the results, the F-statistic (67.192) exceeds the critical F-value (3.94), and the p-value (0.005) is below the significance

level of 0.05. These findings indicate the statistical significance of the model and support the prediction regarding the impact of continuous improvement on Water Projects performance in Machakos County.

Table 6: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	8.916	1	8.916	67.192	.000 ^b
Residual	20.567	155	.133		
Total	29.482	156			

a. Dependent Variable: Performance of Water Projects

b. Predictors: (Constant), Continuous Improvement

From the findings, the regression equation can be displayed as;

$$Y = 0.22 + 0.932 (\text{Continuous Improvement})$$

Based on the findings, continuous improvement positively impacted water projects performance in

Machakos County, as evidenced by 0.932 regression coefficient. The findings suggest that for an improvement in the continuous improvement, there is a 0.932 enhancement in water projects performance in Machakos County, other factors being constant.

Table 7: Regression Coefficients

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	.022	.443		.050	.961
Continuous Improvement	.932	.114	.550	8.197	.000

a. Dependent Variable: Performance of Water Projects

VI. DISCUSSION OF THE FINDINGS

The results from correlation analysis showed that there is a positive linear association between continuous improvement and the performance of Water Projects in Machakos County. The results from regression analysis also showed that continuous improvement has a positive influence on the performance of Water Projects in Machakos County. These findings show that continuous improvement impacts performance of water projects' performance to a large extent. The findings conform to Abdill (2017) findings that continuous improvement allows project managers to generate better projects at reduced costs while meeting the desired project goals.

The study established that performance reviews and reporting inform the priorities in the county integrated development plans and ultimately resource allocation for water projects the county. These findings agree with Kiumbe, Wambugu and Luketero (2018) findings that project performance review helps determine whether the organization can continue investing time and resources in the ongoing and new projects. The study found that performance reviews inform county priorities especially when there is need to

prioritize projects based on resource constraints. These findings agree with Okul and Nyonje (2020) findings that the outcomes of the performance reviews are critical in management decisions on resource allocations, performance improvement of projects, and recommend systems for better implementation of the project. In addition, the study revealed that the county government uses lessons from project performance reviews of ongoing projects to improve the design of new projects.

The study found that performance reviews and reporting as a key foundation of continuous improvement leads to effective implementation of water projects in Machakos County. These findings are in line with Winiko, Mbugua and Kyalo (2018) arguments that data from performance reviews are key ingredients for quality improvement and decision-making during project implementation. The study also found that performance reviews help management to document lessons, communicate progress and make changes in consultation with relevant stakeholders of the project. These findings are in line with Kithinji, Gakuu and Kidombo (2017) findings that communicating and disseminating the progress and impact of the projects through reports with external and internal stakeholders

leads to accountability and ownership. The study also found that when effectively consulted and informed, the stakeholders are generally satisfied with the level of continuous improvement and changes made in the design of water projects. However, the study established that in Machakos county, some stakeholder especially project beneficiaries, are never meaningfully involved in the process of continuous improvement for water projects due to time and resource constraints.

VII. CONCLUSION AND RECOMMENDATIONS

The study concludes that continuous improvement has a positive and significant effect on performance of Water Projects in Machakos County. The findings indicated that feedback with stakeholders through joint reviews; utilization of reports for Management decision making; communication with stakeholders to get their inputs into the project; improvement of project quality, systems, and processes; and adapting the project to manage risk and changing context. The findings imply that an improvement in continuous improvement leads to a subsequent improvement in the performance of Water Projects in Machakos County.

The study established that as a stakeholder beneficiaries and community members are not adequately involved in the continuous improvement in the water projects as such decisions are made by technocrats from the Ministry of water, project managers and donors. Therefore, this study recommends that key stakeholders especially end users should be involved in continuous improvement through feedback mechanisms, joint performance reviews, community sessions, and site visits. The community sessions would solicit inputs on aspects that need improvement including water quality, management systems and operation processes. The community engagement sessions would provide an opportunity to review progress made and share lessons from monitoring reports. The project managers should also create opportunities and channels to inform key stakeholder of management decisions and strategies for continuous improvement of water projects in Machakos County.

Suggestions for Further Research

This research was limited Machakos County, Kenya. The findings of these studies cannot be applied to other counties in Kenya because the country has 47 other counties with different and diverse geographical, socio-economic, and political contexts. The research also recommends further studies on effect continuous improvement on performance of other types of projects like health care projects and construction projects among others. The research revealed that continuous improvement only explains 30.2% of performance of water projects in Machakos County. Further studies should be carried out to determine what other factors

affecting the performance of water projects in Machakos County.

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Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.



Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

PREPARATION OF ELETRONIC FIGURES FOR PUBLICATION

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

TIPS FOR WRITING A GOOD QUALITY MANAGEMENT RESEARCH PAPER

Techniques for writing a good quality management and business research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of management and business then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice. Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.



21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium through which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.



- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.



Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.



Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.



Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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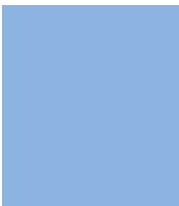


CRITERION FOR GRADING A RESEARCH PAPER (COMPILATION)
BY GLOBAL JOURNALS

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Topics	Grades		
	A-B	C-D	E-F
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring





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