

Transforming Enterprise Application Rationalizations: A Design Thinking Approach to Customer-Centric Innovation

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ABSTRACT: This article explores the capacity of design thinking (DT) to transform corporate application rationalization in multinational companies. This article is broadly targeted at IT stakeholders, from expert levels to chief technology officers (CTOs) in large multinational companies with a mandate to make complex application portfolios easier. This case study was conducted at one of the world's largest tobacco companies, with around 2,600 applications running across the world to cater to its 180 markets. In the context of thousands of applications in the IT landscape, simplifying the portfolio aids in maximizing efficiency and facilitating digital transformation objectives. We outline a user-focused application evaluation process that decommission, consolidation via design thinking via empathy, ideation, and prototyping. The study employs the UX Honeycomb model to quantify usability and user satisfaction within applications and proceeds to employ A/B testing to confirm its validity. The study reveals that the incorporation of end-user feedback within the rationalization process significantly raises adoption levels and aligns the IT environment with business objectives. The research establishes that a customer-centric approach is required in a bid to achieve long-term innovation and operational success.

KEYWORDS: Design Thinking, Application Rationalization, UX Honeycomb, A/B Testing, User-Centric Innovation, IT Ecosystem

I. INTRODUCTION

Application rationalization is the process of analyzing an organization's software for the elimination of redundancies, correction of inefficiencies, and ensuring all tools are aligned to business goals [1]. Rationalization enables companies to understand how their systems work and the value they deliver, which means better operations and better decision-making [2]. In the process, organizations usually de-retire outdated tools, consolidate duplicate tools, or sunset systems (see Table I) that are no longer applicable to the business. Application rationalization also helps curb costs to a large degree and facilitates optimum use of resources, thereby making businesses more responsive.

Table I. Application Rationalization

Application Rationalization
Decommission
Consolidation
Upgrade
Tolerate

By evaluating applications formally against criteria such as technical merit and support for business processes, companies can make more informed decisions in line with their long-term strategic objectives [3]. It has a particularly significant role to play in multinational companies, where different business units and different operational needs give rise to complex IT infrastructures, and management and maintenance are more complicated tasks.

Historically, application rationalization has been viewed as an IT-centric initiative. IT departments typically evaluate and optimize the software application portfolio, usually with technical issues like system use, performance, and compatibility in mind. This conventional method ignores a crucial stakeholder: the end-user. Daily users of these apps, the end-users (see Figure 1), are ideally positioned to offer insights on application performance in practical settings, spot issues, and recommend changes to better

meet their needs [4]. Daily users of these apps, end-users are ideally positioned to offer insights into application performance in practical settings, spot issues, and recommend changes to better meet their needs [4]. Including end-user input into the application rationalization process guarantees that the applications stay relevant and user-friendly, therefore guiding more successful results. In order to get user trust and loyalty, the evaluation must understand how user prefers their orders to be delivered [5]. Involving users not only improves happiness but also promotes use, therefore supporting the success of the whole IT transformation plan [6].

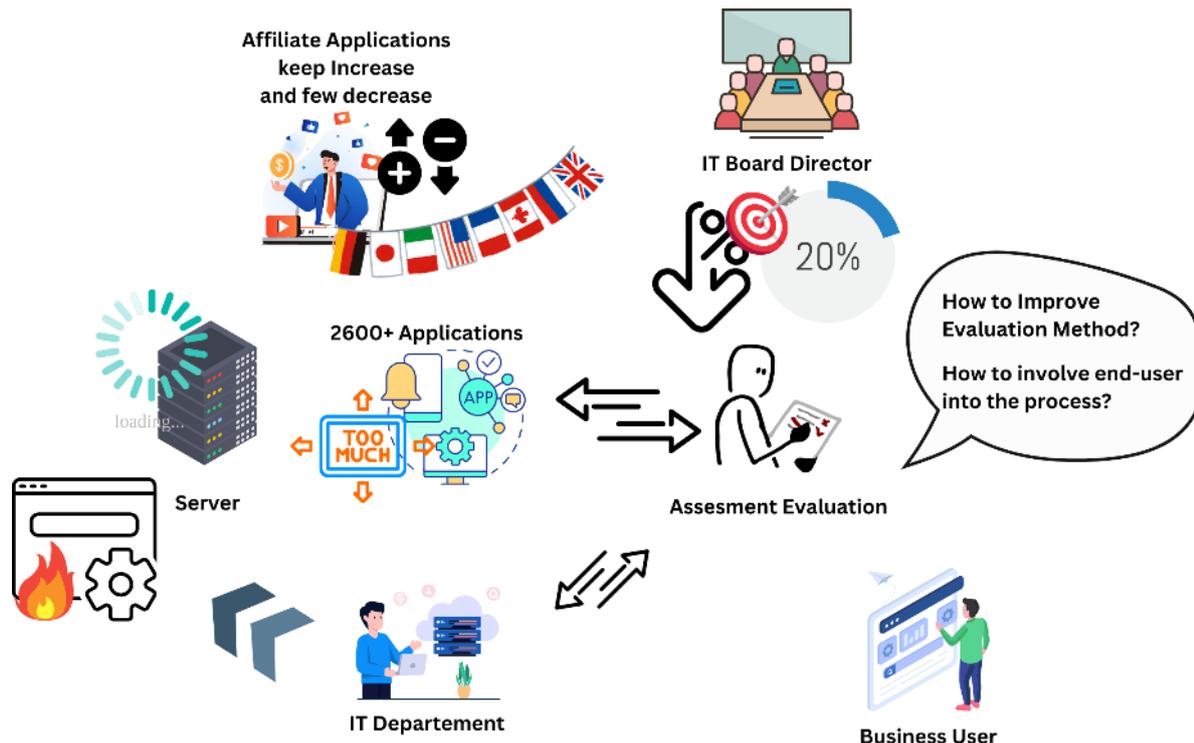


Figure 1. Rich Picture

Emphasizing empathy and user-centric problem solving, the design thinking method helps to shift the application rationalization process from an IT-centric one to one that includes the end-user's viewpoint [6]. Involving end-users at every stage of the rationalization process, from identifying problems to prototyping and testing, helps companies to ensure that the solutions are both technically strong and fit real user needs [7]. This paper underlines the use of the UX Honeycomb model to ensure that applications meet usability, accessibility, and desirability criteria for end-users and supports the inclusion of design thinking into the application rationalization process [8].

II. LITERATURE REVIEW

Application rationalization is the methodical evaluation of an organization's software portfolio to determine which programs to keep, combine, or phase out, therefore aiming to lower complexity and expenses. Modern techniques improve this by collecting user input on usability and workflow compatibility, so ensuring more effective IT environments and more adoption [9].

A. Native IT Portfolio Rationalization in Enterprises

Native IT portfolio rationalization refers to the conventional approach of evaluating and optimizing an organization's application portfolio to reduce complexity, eliminate redundancies, and align IT systems with corporate objectives [10]. Usually, this process involves valuing applications, categorizing them, and deciding which ones to retain, merge, or cease use. The aim is to maximize the IT infrastructure, enhance efficiency, and lower costs [11]. Historically, IT departments have mostly pushed this strategy; business users have had little influence. Although IT professionals think about technical concerns like system performance, compatibility, and cost, end-user opinions and requirements are sometimes overlooked. This might result in results

that, although theoretically right, do not completely reflect the actual needs and experiences of daily program users [12]. Moreover, indigenous rationalization initiatives occasionally prioritize efficiency and cost reduction above user satisfaction and involvement. A narrow perspective could lead to the exclusion of programs vital for corporate operations and user productivity that are expensive but necessary [13].

B. IT Engagement with Business Users

Ensuring that technical investments support and advance business goals depends on optimal alignment between IT and business. Historically, IT departments and business users have not always matched, which has caused conflicting objectives and poor application performance [14]. Often, this difference leads to rationalization initiatives that fall short of end-user requirements, therefore lowering adoption and happiness.

Organizations can bridge this gap by adopting a design thinking approach—starting with empathy and repeating continuously as per user feedback. The integration of business users into the application rationalization process guarantees early achievement of necessary data on actual usage behavior, issues, and desired features [15]. Co-design meetings and workshops within design thinking approaches uncover real user needs, thereby enabling IT to establish evaluation criteria like technical quality and user experience [16]. The iterative process through collaboration ensures that rationalization decisions are based on real user feedback, thereby resulting in better and more acceptable solutions. Furthermore, with prototyping and empathetic listening available, the way is opened up for improved communication between business units and IT groups and the unlocking of innovative potential and possibilities not visible from a purely technical perspective. Such a comprehensive perspective enables businesses to make fully informed choices that lead to more operational effectiveness and customer satisfaction [17].

C. Customer-Centric Approach in Application Rationalization

Customer centricity extends conventional IT justification by challenging companies to assess application portfolios from the user's perspective. It encompasses employing Peter Morville's seven-faceted UX Honeycomb model useful, usable, discoverable, accessible, credible, and worthwhile—a set of evaluation criteria [18]. By evaluating each program against these criteria in conjunction with traditional technical indicators including performance and security, organizations can guarantee that decommissioning and consolidation decisions fit genuine user needs. This two-axis assessment involves end users actively participating; their feedback on usability, workflow integration, and general satisfaction influences the retention, enhancement, or discontinuation of applications [19]. When a decision not only meets but exceeds a customer's expectations, there's a strong chance they'll recommend it to others, essentially becoming informal influence future adopt behavior [5]. Therefore, the outcomes of rationalization become more important, more widely accepted, and more effective in fostering user productivity and operational efficiency.

III. METHOD

This study adopts a purely qualitative, multiple-case approach at the enterprise level to build and validate a user-centric application rationalization framework [20]. We present our conceptual framework, which delineates the comprehensive research process—from data collection to iterative gap-closure workshops and outcome synthesis—and subsequently specifies the design thinking activities to implement the co-creation and prototyping phase [21].

A. Conceptual Framework

Illustrates our comprehensive research framework (see Figure 2), progressing from an assessment of the existing IT-focused condition through a systematic design thinking intervention to a pragmatic approach, ultimately resulting in a customer-oriented application rationalization process [22]. The legacy rationalization methodology is predominantly executed by IT experts with minimal input from end-users. Consequently, more than 2,600 applications are dispersed throughout the company, resulting in concealed “shadow” systems and minimal acceptance of decommissioning initiatives [23]. This diagnosis necessitates a methodical incorporation of user opinions at each phase of the rationalization lifecycle.

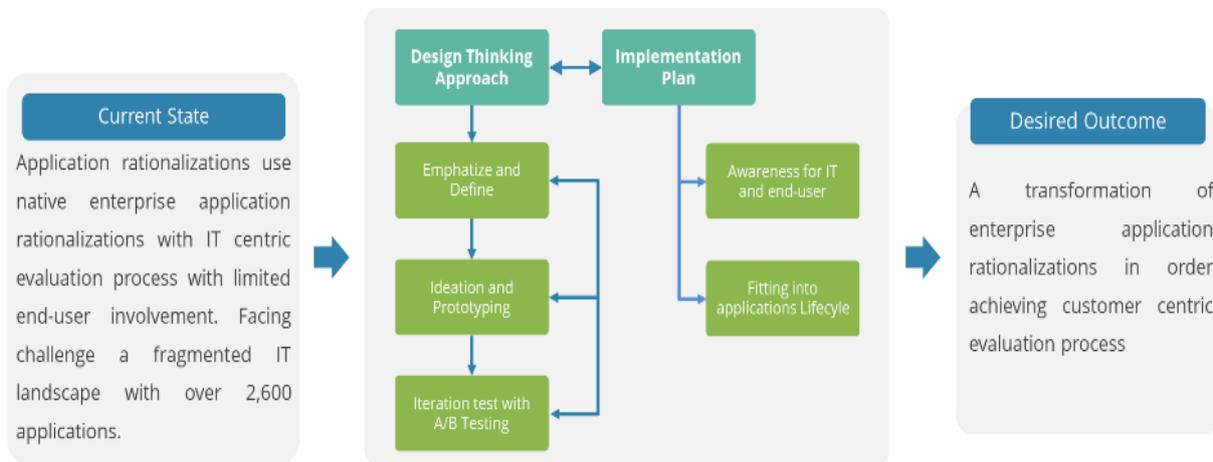


Figure 2. Comprehensive research framework

B. Design Thinking Approach

To bridge the gap, we incorporate a 5-stage design thinking cycle as the foundation of our framework (see Figure 3). Empathize through the utilization of empathy maps and journey mapping; we identify genuine user pain spots and formulate a precise problem description that encapsulates both IT governance and business-user needs [24].

Ideation and prototyping through cross-functional workshops produce and refine assessment criteria, resulting in the collaborative that harmonizes UX Honeycomb dimensions with essential technological KPIs [25]. In the iteration, we implement competing versions of the Scorecard (the novel, user-focused tool against the traditional IT checklist) to gather formative feedback on clarity, relevance, and decision-making confidence [26]. These three sub-phases all contribute to the primary design thinking node, facilitating ongoing refinement.



Figure 3. Design Thinking Stage (source: interaction-design.org)

IV. Results and Discussion

Later sections discuss the forthcoming wealth of insights formed through our Empathize workshops, claiming inadequacies of existing techniques to meet customers' needs. We demonstrate the effect these had on the establishment and evolution of a new, user-driven prototype with technical and experiential test criteria involved [27]. The usability issues are fixed, and user testing informs it in being more congruent with the user's decisions and needs. Achieving a user-appropriate design and increased satisfaction relies on an iterative process of improvement, increasingly refining prototypes based on continuous user feedback [28]. This method accentuates the core position of user-centered design in formulating effective solutions, placing the final product both useful and attractive to its end consumers [29]. Finally, we show the actual impact of this approach through controlled A/B testing to show how the hybrid approach enhances rationalization choices and user satisfaction over the conventional, IT-driven process [30].

A. Insights from the Empathize Stage

During the Empathize phase, we conducted a focus group discussion (FGD) with IT experts to examine the current application rationalization practices within the organization (see Table II).



Table II. List of IT Expertise Criteria

No	Position	Role in Application Rationalization Project	Criteria
1	IT Portfolio Manager	Leads evaluation and prioritization of applications throughout their lifecycle	Total cost (purchase, licenses, upkeep); actual usage frequency; potential to merge similar tools
2	Solution Architect	Designs and validates technical integration of the User-Tech Scorecard tool	Ease of connecting with other systems, ability to exchange data automatically, complexity of data flows
3	Security & Compliance Lead	Assesses security posture and regulatory compliance risks for each application	Exposure to security threats; presence of built-in data-protection features (e.g., encryption); regulatory compliance
4	Database Administrator	Ensures data integrity and performance requirements are met in rationalization decisions	Speed of data queries; reliability of backups and recovery; accuracy and consistency of stored information
5	Application Support Lead	Provides insights on support effort and maintenance feasibility of candidate applications	Average time to fix issues, frequency of updates or patches, volume of support requests
6	Business Systems Analyst	Translates business workflows into evaluation criteria and analyzes user impact	Fit with day-to-day tasks; number of active users and usage trends; user feedback on problems or frustrations
7	Business Engagement Manager	Facilitates collaboration between IT and business stakeholders to ensure evaluations align with strategic objectives	Level of stakeholder participation; clarity of documented business requirements; alignment of each application to key business goals

The discussions revealed that the current approach is largely IT-centric, emphasizing technical factors such as system performance and regulatory compliance. As a result, it often overlooks the needs and experiences of end-users, as reflected in the findings (see Table III).

Table III. Result of discovery

Insight	Observation	Impact
Redundancy in Applications	Multiple applications provide overlapping features	User confusion, duplicated effort, wasted maintenance costs
Insufficient User Engagement	End-users are not involved in evaluation or decision making	Solutions misaligned with real needs; low adoption rates
Technical-Centric Evaluations	Criteria focus on technical metrics (performance, cost, compliance) without considering UX aspects	Retention of user-unfriendly applications; hidden “shadow” IT

These findings underscore the importance of incorporating user perspectives into the application rationalization process to enhance both its effectiveness and user satisfaction [31].

B. Prototyping Based on Ideation

Using results from the Empathize stage, we began the Ideation phase including desk research and industry best practice benchmarking. Designed to move application rationalization from an entirely IT-centric focus to a more holistic approach including user perspectives, this process produced a prototype [32].

Emphasizing factors like usability, accessibility, and credibility, the prototype included additional evaluation criteria based on the UX Honeycomb model (see Figure 4), as indicated on the list (see Table IV).



Figure 4. Peter Morville’s User Experience Honeycomb

Table IV. Criteria for user experience

UX Criteria	Description	Business Value
Usability	The ease and intuitiveness with which users can interact with the application	Reduces training time; increases task efficiency and user satisfaction
Accessibility	The degree to which the application can be used by people with diverse abilities in various contexts	Ensures compliance with legal standards; broadens user base
Credibility	The perception of trustworthiness and reliability that users have in the application	Builds user confidence; supports adoption and long-term engagement

By integrating these user-focused criteria, the prototype seeks to guarantee that application rationalization decisions comply with both technical specifications and user requirements, thereby improving the overall user experience.

C. A/B Testing

To validate the effectiveness of the new user-centric application rationalization model, we conducted A/B testing simulations of business engagement as user representatives. It presented a comparison of 2 processes, the IT-centric and the customer-centric evaluation processes (see Figures 5 and 6), where the business engagement starts to evaluate their sample portfolio utilizing the process.

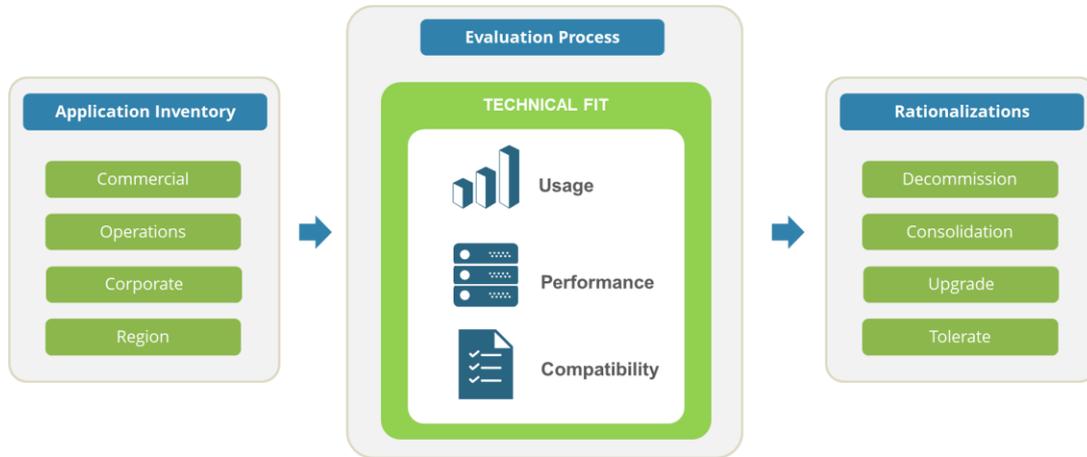


Figure 5. IT-Centric Evaluation Process (A)

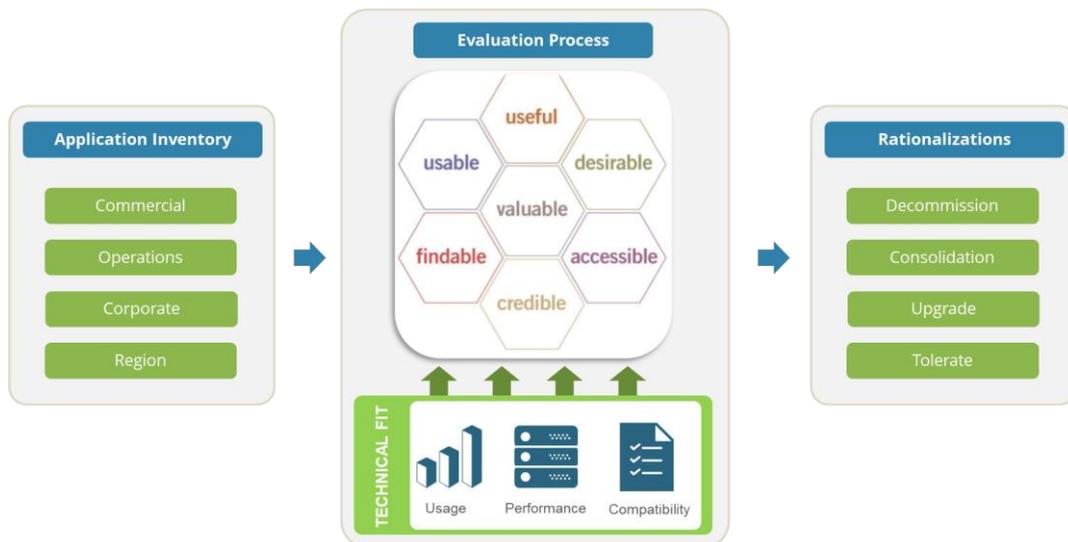


Figure 6. Customer-Centric Evaluation Process (B)

The qualitative evaluation of the customer-centric application rationalization process yielded overwhelmingly positive feedback from business-engagement participants (see Table V). Eight out of ten interviewees reported a marked increase in their confidence to drive rationalization decisions, citing a newfound “shared language” with IT stakeholders and clearer pathways to action. Three core themes emerged from the thematic analysis—empowerment, alignment, and efficiency—which together illustrate how embedding user-centric criteria transforms both the experience and the outcomes of application portfolio management.

Table V. Sample test result

No	Quote
1	“I feel empowered to speak up about which apps truly help our workflows—IT now understands exactly what I mean.”
2	“When I talk about an application’s usability or credibility, I no longer get blank stares from the technical team.”



3	“Discussing ‘findability’ and ‘desirability’ made our decommissioning decisions crystal clear to everyone around the table.”
4	“For the first time, I can argue for keeping or retiring an app based on how it impacts my colleagues, not just server metrics.”
5	“Our meetings now fly by—IT and business share the same terms, so there’s no more endless translation.”
6	“I’m confident to propose retiring six low-value apps because I know my feedback is heard in IT’s language.”
7	“This approach gave me the words to explain why an app felt clunky—IT immediately saw how it slowed us down.”
8	“Eight out of ten of us agree: talking the same language has turned rationalization from a headache into a team effort.”

Participants said they really felt empowered to help rationalization talks. Historically, business users felt sidelined by technical jargon and statistics that had little bearing on their daily struggles. One participant said, "IT now knows precisely what I mean; I feel empowered to speak up about which apps really support our workflows," reflecting. Criteria framed in terms of user-centered terms—such as findability and desirability—allowing participants to express specific business needs instead of abstract performance numbers helped to explain this change in confidence. Therefore, business engagement leaders reported they were more actively involved in guiding decision forums and workshops than simply sitting back and watching IT-driven studies.

The other general theme was the close alignment of IT and business teams. Several of the participants reported that the new shared evaluation language eliminated typical communication roadblocks. As one of them put it, "Our meetings now fly by—IT and business use the same words, so no more endless translation." By combining technical and user experience perspectives, both sides reached consensus more rapidly, reducing friction and building trust. Business users were confident their needs were being met, while IT had increased justification for moves such as consolidation or application retirement.

Overall, the qualitative test confirmed that a user-centered rationalization approach based on design thinking and the UX Honeycomb model—increased stakeholder confidence, cross-functional alignment, and decision-making speed. Business users felt heard fully by IT, and the common language helped ensure and accelerate outcomes. These conclusions highlight the significance of including end-users' opinions in IT management and show this can be accomplished in other challenging, multinational institutions. To build a work environment that encourages user-centricity, we must embrace adaptability and continuously seek new approaches [33].

V. CONCLUSION

This paper shows that combining customer-oriented evaluation with conventional technical criteria significantly enhances the efficacy of simplifying business applications. Engaging end-users from the start helped us to identify three important insights: widespread application redundancy harming productivity, a decision-making process limited to IT that ignores practical procedures, and a lack of openness undermining stakeholder confidence [34]. Those using this dual-criteria approach reported significantly more confidence in their rationalization choices, were more ready to carry out the resulting portfolio changes and had less problems in post-deployment support [35]. These results have twofold implications. Organizations using a user-centric rationalization framework can anticipate more efficient decommissioning cycles, characterized by less resistance and less workarounds from business teams. Second, IT executives get a more balanced, data-informed perspective of applications by evaluating user experience together with system performance, therefore allowing them to strategically distribute resources to solutions enhancing user productivity as well as operational efficiency [36]. This finding underlines the need for companies to institutionalize organized user involvement, enhance hybrid evaluation measures in real-time settings, and constantly change weighting in reaction to changing usage patterns. Doing so will help companies to maximize their application environments and create a culture in which technical investments are both technically solid and suitably in line with the individuals who depend on them daily.



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Cite this Article: Sungkar, R., Dellyana, D. (2025). Transforming Enterprise Application Rationalizations: A Design Thinking Approach to Customer-Centric Innovation. International Journal of Current Science Research and Review, 8(5), pp. 2296-2305. DOI: <https://doi.org/10.47191/ijcsrr/V8-i5-38>