



## Leveraging Technology Characteristics to Enhance Firm Customer Response Capability

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### Chronicle

### Abstract

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The purpose of this study is to investigate the impact of Technology Characteristics namely, reconfigurability and customization on Firm Customer Response Capability (CRC). A study conducted among the selected service sector organizations in Pakistan including Higher Education Institutions (HEIs) and Banking/ insurance companies investigates the relationship between technology characteristics and customer response capability. Drawing on data collected from 275 respondents in higher education and 283 from the banking sector, separate regression analyses were conducted to assess the relationship between technology characteristics and CRC. The findings show a strong positive relationship between technology characteristics and customer response capability. The study employed descriptive statistics, correlation analyses, and regression modeling, executed through SPSS, to examine the relationships among variables. The results underscore the critical role of technology characteristics in enhancing CRC in the service sector of Pakistan. Besides contributing to the theoretical literature on the relationship between technology characteristics and customer response capability, the results suggest service sector organizations to implement reconfigurable and customizable technologies which allow employees to tailor the system according to their workflows and specific task needs, leading to improved customer response capability. The findings of current study emphasize the tremendous and unexplored research potential at the intersection of information systems and other study disciplines, such as marketing and management. The findings offer practical implications for managers seeking to develop CRC of the firm by leveraging technology. Future studies could apply this framework across different organizational contexts and adopt diverse sampling approaches to strengthen the generalizability of the results.

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**Keywords:** Customer Response Capability (CRC), Technology Customization, Technology re-configurability, Higher Education Institutions (HEIs).

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## INTRODUCTION

Studies on customer response capability are often grouped into three categories: construct development, antecedents, and outcomes. This study focuses on the antecedents and investigates the impact of technology characteristics on the development of customer response capability. The customer response capability has emerged as an important topic for both academicians and practitioners alike. Scholars

found that organizations with improved CRC have refined procedures to improve customer experience (Setia & Venkatesh, 2013). Sukanthasirikul and Phornlaphatrachakorn (2021) argued that businesses with strong CRC can meet the customers' demands swiftly and accurately. In order to sustain a competitive edge and survival in fiercely competitive business environment, role of CRC cannot be overemphasized. Contemporary studies continue to highlight the critical role played by customer sensing and responding capabilities of firms in achieving competitive advantage (Tseng, 2023). Silva-Atencio (2025) also found that service organizations must be proactive in their efforts to provide personalized services as per unique customer needs. A number of studies have highlighted the significant impact of CRC on various organizational outcomes: product success (Tseng, 2023), customer satisfaction (Larivière et al., 2017), customer loyalty (Huang & Rust, 2018), and competitive advantage (Verhoef et al., 2009). Hence, it is critical to explore the factors that influence CRC which has turned out as key enabler for organizations to be competitive in the fierce business environment.

These studies have contributed much to our understanding of the effects of customer response capability, but they reveal little about its antecedents. This research aims to fill this gap by offering an understanding that how reconfigurable and customizable technology can lead to improved customer response capability using theoretical lens of the Task-Technology Fit (TTF) theory. A multi-source, multi-level approach was employed to collect data from 95 customer relationship managers and 283 front desk officers in Pakistan's service sector, including higher education institutions and financial institutions to test the model. The objective of the study was to determine the effect of technology characteristics on firms CRC.

### **What is customer response capability (CRC)?**

Customer response capability refers to a "firms' ability and expertise to precisely and quickly satisfy client requirements via effective and prompt action" (Zvirgzdiņa et al., 2015). CRC has two important dimensions namely "customer response expertise" and "customer response speed" (Setia et al., 2013). Customer response expertise refers to the accuracy of the customer's responses while customer response speed refers to the timeliness of the responses to the customers.

Customer response capability is highly needed for organizations to achieve competitive advantage and success (Sukanthasirikul & Phornlaphatrachakorn, 2021). It is a core ability that provides firms with the means to influence customers and attract them to the products offered and achieve a more loyal and sustainable customer base (Wang et al., 2021). The fast paced growth of technology requires organizations to be flexible and leverage IT to meet customers' changing demands (Wunderlich et al., 2025).

Various studies have identified key factors that influence an organization's ability to develop strong Customer Response Capability (CRC), e.g.:

- Yang (2023) studied the effect of AI service quality on the customer response capabilities leading to customer co-creation experience
- Sajjaviriya et al. (2020) emphasized customer-oriented culture leading to enhanced CRC

- Lakshmi and Jesiah (2020) proposed organizational agility in strengthening CRC
- Trainor et al. (2014) explored the impact of technology utilization to enhance response efficiency
- Homburg et al. (2009) indicated that employee empowerment lead to quicker and more effective customer responses
- Jayachandran et al. (2005) assessed the role of customer knowledge management – in improving CRC.

Despite the wide range of research on customer response capability, very few studies have examined the effect of technology characteristics on it.

### **A fresh focus on Technology Characteristics**

Fu et al. (2020) highlighted that technology characteristics and task requirements as the most important factors which need to be kept into consideration while forestalling performance outcomes. Technology characteristics refer to the specific features, capabilities, and flexibility of an information system that influence how effectively it supports user tasks and organizational goals. It may include complexity, reconfigurability, customization possibilities, performance, user interface design, integration capabilities, security features, and mobile accessibility as a few examples of these features, among many others. There could be a wide range of technology characteristics associated with an IS implementation. However, to ensure clarity and manageability in the study, this study aimed to narrow down the focus to a select set of characteristics that are most relevant and significant to employees in developing CRC. The goal of the study is to expand on prior research (Xu et al., 2022) by identifying characteristics that are likely to be impactful in the context of service sector organizations in Pakistan.

In the context of customer service management, two key technology characteristics—technology reconfigurability and technology customization—have received particular attention. These attributes define the degree to which technological systems can be tailored or adapted to meet evolving user and customer requirements (Bala & Venkatesh, 2013; Xu et al., 2022). Further, we based our research on specific theoretical framework /model that emphasized the role of reconfigurability and customization in influencing CRC. Hence, the aim in selecting technology characteristics is to align our study with this particular framework rather than incorporating diverse technology characteristics. This study also prioritized technology characteristics that are more directly linked to employees' ability to customize and adapt IT systems in the workplace. Reconfigurability and customization are often seen as key factors that empower employees to shape their work environment and tasks, thus directly impacting CRC.

### **Technology Reconfigurability and Customer Response Capability**

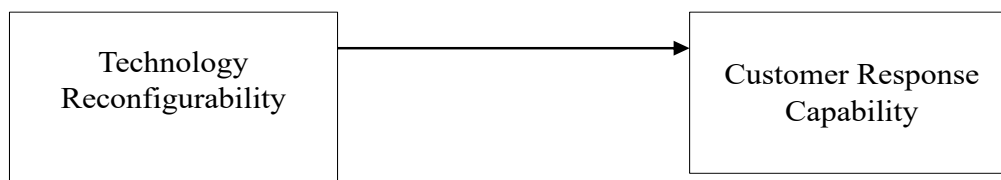
Technology re-configurability refers to the flexibility of a system that allows for modifications of its features and functionalities while it is being used. In simpler terms it means that the ES can be adjusted-or reconfigured by the user to better suit their needs and preferences as they interact with the system. Zulfiqar et al. (2025) highlighted the importance of creative customer services by the frontline employees in the context of service sector. Scholars further argue that creative tasks need flexible, adaptable

technology as compared to a standardized automated technology can help perform a highly structured, routine task (Przegalinska et al., 2025). From the perspective of Task-Technology Fit (TTF) theory, reconfigurability contributes directly to system-task alignment. Although previous studies have examined various aspects of customer response capability, none have addressed the effect of technology reconfigurability on CRC. Reconfigurable technologies empower employees to adapt, experiment, and refine their workflows, enabling to respond accurately and efficiently to the customer needs. This adaptability empowers employees to align technology with the requirement of the task, leading to enhanced CRC. On the contrary, non-reconfigurable systems can facilitate its users with routine use features only, hindering innovation and adaptation due to rigidity (Xu et al., 2022; Kim et al., 2016).

Scholars are also found through the lens of TTF theory that adaptability in IT allow users to customize system features to meet their specific tasks requirements (Tallon, 2007). For instance, a reconfigurable IT enabled interface would facilitate an employee to gather more information about customers and to categorize customers as per their varying preferences or other characteristics. The information obtained through the modification of IT features would help employees to make plans and strategies necessary for customer retention in the face changing market conditions. This will, resultantly, enable employees to achieve their work goals by responding to customers in an efficient (faster) and effective (accurate) manner. Through cooperation and coordination, customer complaints can be addressed effectively and efficiently leading to customer loyalty (Berraies et al., 2019).

Team mates can discuss and evaluate how to take corrective or proactive actions to efficiently and effectively respond to customers. Technology reconfigurability enable employees to identify certain shortcuts to help them finish jobs more quickly and effectively (Bala & Venkatesh, 2013; Stefan Thatcher & Craig, 2018). In this way, IT reconfigurability will facilitate managers to get more information to meet their emergency preferences while responding to customers. They are more likely to respond efficiently and effectively by modulating IT features (Sundaram et al., 2007). Previous study also suggested that employee empowerment enable organizations to respond quickly and accurately to changing expectations of customer (Berraies et al., 2019). Recent studies continue to argue that with the help of technical support received through flexible technology features, organizations can enhance both sense and response capabilities (Junfeng & Butkouskaya, 2025). Hence, reconfigurable systems, by supporting real-time modifications, allow employees to dynamically adapt technology to changing needs, fostering autonomy and active engagement. This adaptability enhances task alignment, leading to higher levels of infused use and improved outcomes. Thus, we hypothesize:

**H1.** Technology reconfigurability is positively related to customer response capability.



**Figure 1.**

**Technology Customization and Customer Response Capability**

Technology Customization (TC) refers to the ability of an organization to modify and tailor its technological systems to meet specific business needs and user requirements (Srinivasan et al., 2002). Customization play important role in aligning technology with organizational procedures thereby facilitating frontline employees to effectively address customer inquiries and service requests which enhance their Customer Response Capability. (Schroeder et al., 2020).

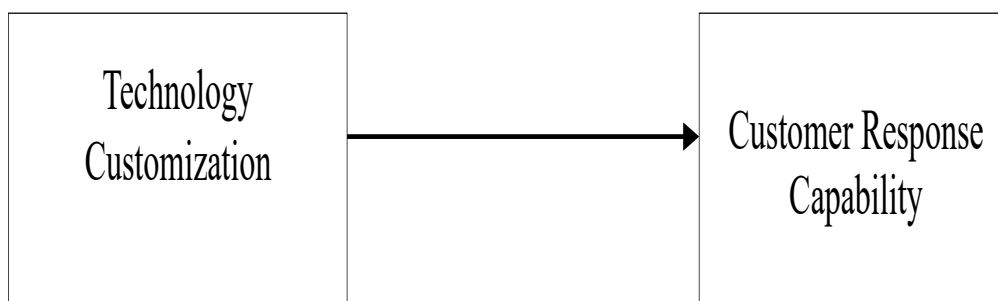
Customization allow IT users to acclimatize system interfaces/ portals, and workflow modules to match with their task requirements. Li and Pan (2025) reported that operational flexibility and customization features enhance users' ability to serve their practical task needs. Zulfiqar et al. (2025) highlighted the importance of creative customer services by the frontline employees in the context of service sector. Scholars further argue that creative tasks need flexible, adaptable technology as compared to a standardized automated technology which can help perform a highly structured, routine task (Przegalinska et al., 2025).

Empirical research supports the idea that organizations implementing customized IT solutions experience higher service agility and improved customer response (Verhoef et al., 2019). Conversely, firms relying on rigid, non-customizable systems struggle with operational inefficiencies and fail to meet evolving customer demands (Seddon et al., 2010). Recent studies continue to corroborate this statement by emphasizing that with the help of customized technology, organizations can enhance both sense and response capabilities (Junfeng & Butkouskaya, 2025).

For organizations aiming to enhance CRC, prioritizing customization is essential. Customized IT allow employees to tailor features such as workflows, dashboards, and data displays, organizations can ensure better alignment between the system and task requirements (Tsou, 2022). This alignment enables employees to interpret information more effectively and respond swiftly to customer needs, thereby strengthening the organization's overall sense and respond capability.

Thus, the following hypothesis is put forward:

**H2.** There is a positive relationship between technology customization and customer response capability.



**Figure 2.**

## DATA ANALYSIS AND RESULTS

To determine the effect of Technology Characteristics on customer response capability, a survey was conducted in selected service sector organizations in Pakistan. The survey instruments were developed using validated measures from previous studies, ensuring reliability and robustness. Given that all respondents were educated and proficient in English, the questionnaires were administered in English to facilitate clarity and comprehension. Data collection involved physical visits and online surveys, ensuring a diverse and representative sample. Two separate surveys were designed to collect data from distinct stakeholder groups. The first survey targeted operation managers to measure customer response capability. The second survey was distributed to frontline employees to assess technology reconfigurability and technology customization. The data collection was conducted in Pakistan's banking and education sectors, chosen for their significant contributions to the country's economic growth and societal development. Technology reconfigurability was measured using four items adapted from Bala and Venkatesh (2013). Customer Response Capability was adopted from (Jayachandran et al., 2004) consisting of two dimensions: customer response expertise and customer response speed. Customer response speed was measured using a six-item scale adopted from (Jayachandran et al., 2004) while Customer response expertise was measured using a three-item scale adopted from (Jayachandran et al., 2004).

### Demographics

The study sample comprised **95 customer relationship managers** and **283 employees** from the participating organizations.

#### Gender:

In terms of gender distribution, the majority of customer relationship managers were male (87.1%), with females representing 12.9%. Similarly, among employees, males accounted for 78.7% and females for 21.3%.

#### Age:

Regarding age, more than half (55.0%) of the customer relationship managers were above 35 years of age, followed by those aged 31–35 years (33.3%) and 26–30 years (11.6%), with no respondents in the 18–25 age bracket. In contrast, employees were more evenly distributed, with 36.0% aged 26–30 years, 32.4% above 35 years, 17.2% aged 18–25 years, and 14.3% aged 31–35 years.

#### Education:

Educational qualifications revealed that most customer relationship managers held a Master's degree (73.5%), followed by Ph.D. holders (18.1%) and Bachelor's degree holders (8.4%), with none having intermediate-level qualifications. Among employees, 59.5% possessed a Master's degree, 38.0% a Bachelor's degree, 2.2% a Ph.D., and 0.4% an intermediate qualification.

**Experience:** In terms of job experience, 42.8% of customer relationship managers had more than 10 years of experience, followed by 30.3% with 6–10 years, 24.7% with 1–5 years, and 2.2% with less than one year. Conversely, employees were more concentrated in the early career stages, with 35.5% having 1–5 years of experience, 27.6% less than one year, 19.5% with 6–10 years, and 17.4% with over 10 years of experience.

**Table 1.**  
**Demographics of the respondents**

Demographics	Description	Customer Relationship Managers		Frontline Employees	
		Frequency	%	Frequency	%
<b>Gender</b>	Male	83	87.1	223	78.7
	Female	12	12.9	60	21.3
<b>Age</b>	18–25 Years	0	0.0	49	17.2
	26–30	11	11.6	102	36.0
	31–35	32	33.3	151	14.3
	Above 35	52	55.0	92	32.4
<b>Education</b>	Intermediate	0	0	1	0.4
	Bachelors	8	8.4	108	38.0
	Masters	70	73.5	168	59.5
	Ph.D.	17	18.1	6	2.2
<b>Job Experience</b>	Less than 1 year	2	2.2	78	27.6
	1–5	23	24.7	100	35.5
	6–10	29	30.3	55	19.5
	Above 10	41	42.8	49	17.4
<b>Total</b>	—	<b>95</b>	<b>100</b>	<b>283</b>	<b>100</b>

### Reliability and Validity Assessment

To ensure the reliability and validity of the measurement instruments used in this study, a series of confirmatory tests were conducted. These include factor loadings, Average Variance Extracted (AVE), and Cronbach's alpha coefficients, which are commonly accepted criteria for evaluating convergent validity and internal consistency (Fornell & Larcker, 1981; Hair et al., 2019).

### Factor Loadings and Convergent Validity

The results revealed that all the factor loadings for the items measuring the constructs Technology Reconfigurability (loadings ranged from 0.674 to 0.845), Technology Customization (loadings ranged 0.796 to 0.850), and Customer Response Capability (loadings ranged from 0.673 to 0.844) surpassed the recommended threshold of 0.60 (Hair et al., 2019). It shows that the measurement items are valid indicators of their respective construct and validates the convergence of each indicator on its respective latent construct.

Furthermore, the Average Variance Extracted (AVE) values for TR (0.621), TC (0.680), and CRC (0.606) were all above the 0.50 benchmark, demonstrating that a substantial amount of variance was captured by the constructs relative to measurement error (Fornell & Larcker, 1981). Hence, it establishes the convergent validity of all latent variables.

**Table 2.**  
**Measurement Model Results**

	Factor Loading Score	Squared Loading Scores	AVE	Cronbach Alpha
TR1_m	0.793	0.629		
TR2_m	0.845	0.713		
TR3_m	0.829	0.688		
TR4_m	0.674	0.454	0.621	0.938

Leveraging Technology Characteristics			Qureshi, M, I, S., & Arshad, M. (2025)	
TC1_m	0.841	0.708		
TC2_m	0.850	0.722		
TC3_m	0.810	0.656		
TC4_m	0.796	0.634	0.680	0.893
CRC1	0.761	0.579		
CRC2	0.786	0.618		
CRC3	0.844	0.712		
CRC4	0.736	0.542		
CRC5	0.809	0.654		
CRC6	0.673	0.453		
CRC7	0.818	0.670		
CRC8	0.792	0.627		
CRC9	0.774	0.599	0.606	0.934

### Internal Consistency Reliability

Cronbach's alpha values for all constructs were above the recommended threshold of 0.70, indicating strong internal consistency among the scale items (Nunnally, 1978). Specifically, TR reported an alpha of 0.938, TC had 0.893, and CRC had 0.934. These results confirm that the scale items for each construct are reliable and exhibit internal coherence. Overall, the measurement model demonstrates satisfactory levels of convergent validity and reliability, which confirms that the constructs are adequately measured for use in further structural analysis.

### Descriptive Statistics and Correlation Analysis

Table 3 presents the means, standard deviations, and Pearson correlation coefficients among the main constructs of the study, namely Technology Reconfigurability (TR), Technology Customization (TC), and Customer Response Capability (CRC). The results provide initial support for the proposed relationships.

The descriptive statistics indicate that the mean values for all three constructs are above the midpoint of the 5-point Likert scale, with TR ( $M = 3.862$ ,  $SD = 0.594$ ), TC ( $M = 3.875$ ,  $SD = 0.678$ ), and CRC ( $M = 4.111$ ,  $SD = 0.684$ ), suggesting a generally positive perception of these constructs among respondents.

**Table 3.**  
**Correlation Analysis**

	CORRELATIONS				
	Mean	SD	TR	TC	CRC
TR	3.862	0.594	1		
TC	3.875	0.678	.669**	1	
CRC	4.111	0.684	.515**	.539**	1

**\*\*.** CORRELATION IS SIGNIFICANT AT THE 0.01 LEVEL (2-TAILED).

The correlation analysis reveals significant positive relationships between all constructs. Technology Reconfigurability is positively correlated with Customer Response Capability ( $r = 0.515$ ,  $p < 0.01$ ), and Technology Customization is also positively correlated with Customer Response Capability ( $r = 0.539$ ,  $p < 0.01$ ). Additionally, TR and TC are

significantly interrelated ( $r = 0.669$ ,  $p < 0.01$ ), indicating that these two dimensions of technology characteristics may influence each other in practice.

These results offer preliminary evidence supporting Hypotheses H1 and H2 and suggest that firms with more reconfigurable and customizable technologies are likely to experience enhanced responsiveness to customer needs. However, regression analysis is essential to further confirm these effects.

### HYPOTHESIS TESTING

A simple linear regression analysis was done to test hypothesis 1 to investigate the impact of Technology Reconfigurability (TR) on Customer Response Capability (CRC). It has been found through the regression analysis results that a statistically significant positive relationship exists between TR and CRC. The standardized coefficient ( $\beta = 0.515$ ,  $p < 0.001$ ) indicates that an increase in the technology reconfigurability leads to a considerable increase in the CRC. The unstandardized coefficient ( $B = 0.593$ ) with a standard error (0.042), and the t-value (14.154), indicates a strong and statistically vigorous relationship.

The findings provided an empirical support for the hypothesis confirming that reconfigurable technologies allow firms to be more adaptable to meet and exceed customer unique requirements, thereby enhancing CRC.

**Table 4.**  
**Regression Analysis for Hypothesis 1: TR → CRC**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.822	0.164		11.139	0.000
TR	0.593	0.042	0.515	14.154	0.000

**a. Dependent Variable: CRC**

Moreover, the results of the regression analysis also endorsed the assumption made in hypothesis 2 that Technology Customization (TC) would be positively related to Customer Response Capability (CRC). The standardized coefficient was  $\beta = 0.539$ , indicating a strong and positive relationship between TC and CRC, and the result was statistically significant at  $p < 0.001$ . The unstandardized coefficient ( $B = 0.544$ ) with a standard error of 0.036 yielded a t-value of 15.097, reinforcing the significance of the relationship.

These results validate Hypothesis 2, showing that when organizations implement customizable technologies that can be tailored to specific operational or customer service needs, they are more capable of effectively responding to customer expectations.

**Table 5.**  
**Regression Analysis for Hypothesis 2: TC → CRC**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.005	0.142		14.150	0.000
TC	0.544	0.036	0.539	15.097	0.000

**a. Dependent Variable: CRC**

## PRACTICAL IMPLICATIONS

Numerous practical implications for managers and decision-makers are offered by this study, particularly in service-oriented sectors such as banking and HEIs. First, the results highlight the significant role played by both technology reconfigurability and technology customization in improving CRC. The findings revealed that organizations should prioritize investing in flexible and adaptable technologies to be able to improve sense and response capabilities. Organizations should, therefore, give priority to reconfigurable technology systems to meet changing service demands without requiring major structural changes.

Moreover, the significant positive effect of technology customization on customer response capability indicates that customized digital tools, platforms, and CRM systems enable organizations to align technology with their unique operational processes and customer engagement strategies. Managers should collaborate closely with IT teams and vendors to ensure that CRM systems and related technologies are not just off-the-shelf solutions, but are aligned with firm-specific service objectives. This can be achieved through modular design, customizable dashboards, or intelligent automation that accommodates specific customer interaction patterns. The study also underscores the importance of a strategic and integrated approach to technology investment. Since the combined model explained over 22% of the variance in customer response capability and the regression model was statistically significant, organizations should adopt a long-term technology roadmap that includes continuous system evaluation, scalability, and flexibility.

Leadership should ensure cross-functional communication so that service departments, customer relationship teams, and IT professionals align their goals when adopting or upgrading systems. This integrated planning is essential to fully realize the benefits of technology in improving customer service outcomes. Finally, the results suggest that technology investments must be viewed not just as operational upgrades, but as strategic enablers of customer-centric culture. Customer response capability is not solely driven by technology but is amplified when employees are empowered to leverage these tools effectively. Thus, organizations should invest in regular employee training, digital literacy programs, and create feedback loops that enable frontline service personnel to communicate their needs regarding system improvements. This ensures that the technology infrastructure evolves in tandem with the service goals of the organization, leading to improved responsiveness, reduced customer churn, and long-term competitive advantage.

## LIMITATIONS & FUTURE RESEARCH

This research, while providing valuable insights, has certain **limitations** that open avenues for future study. Firstly, focusing on the service sector in Pakistan, specifically Higher Education Institutions (HEIs) and financial institutions, restricts the applicability of the findings to other sectors or regions. Future investigations could examine similar dynamics in varying industries, such as healthcare or retail, and across different cultural or economic environments to enhance the findings' robustness.

Secondly, while the study assessed technology features (reconfigurability and customization) as independent variables, it did not consider other potentially relevant technological or organizational factors, like system usability, the quality of employee training, or leadership backing. Subsequent studies could incorporate these variables for a more comprehensive understanding.

Moreover, the study's reliance on cross-sectional data limits its capacity to establish causal relationships; conducting longitudinal research could provide a clearer view of how the effects of technology traits and mediating factors develop over time.

## DECLARATIONS

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**Conflicts of Interests:** The authors declare no conflict of interest.

**Consent to Participate:** Yes

**Consent for publication and Ethical approval:** Because this study does not include human or animal data, ethical approval is not required for publication. All authors have given their consent.

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