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Social Entrepreneurial Marketing and Innovation in B2B Services: Building Resilience with Explainable Artificial Intelligence

Femi Olan¹ · Thanos Papadopoulos² · Konstantina Spanaki³ · Uchitha Jayawickrama⁴

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Abstract

Explainable artificial intelligence (XAI) and other digital technologies are altering the nature of social entrepreneurship, marketing, and other service activities. The structures and strategies of entrepreneurs undergo radical change as a result of the impact of XAI on marketing and innovation. Despite the increased interest in business to business (B2B) literature, there are limitations on how and what circumstances the activities of B2B marketing on social entrepreneurship. Therefore, this study outlines how XAI will impact B2B services by building resilience during and after crisis events such as the COVID-19 pandemic. To develop an in-depth understanding on the theories of social entrepreneurship, B2B marketing, and emerging technologies, this study set apart and conceptualize relevant factors and linkages. The result shows that based on a survey of 295 samples of B2B services entrepreneurial businesses, XAI enhances the establishment of a sustainable resilience for B2B marketing activities and contribute to building social entrepreneurial strategies for B2B marketing innovation.

Keywords Emerging Technology · Explainable Artificial Intelligence · B2B Marketing · Social Entrepreneurship · Resilience · Innovation

1 Introduction

Artificial intelligence (AI) has received increased attention in recent years due to its potential to handle a wide range of complicated problems across different industries (Angelov et al., 2021; Chen et al., 2021; Olan et al., 2022; Saura et al., 2021; Zhao et al., 2022). Marketing service providers in

the business to business (B2B) marketing have been able to automate and individualize their service delivery with the use of AI technology (Apostolidis et al., 2022; Robiady et al., 2021). However, AI has made marketing resilience possible and the potential to provide business continuity during and after major crises. These rapid solutions in AI technologies also bring forth a wide range of difficulties and reasonable worries (Angelov et al., 2021; Xie et al., 2020). Scholars and marketing experts have paid a lot of attention to taking a responsible approach to AI in order to make sure that the technology is used fairly and has a long-lasting impact (Arakpogun et al., 2020, 2021; Olan et al., 2021).

AI and machine learning (ML) have shown their capacity to transform B2B marketing by reaching or even exceeding human accuracy levels in most tasks such as explainable decision making (Arrieta et al., 2020) and market forecasting (Meske et al., 2022). Nevertheless, their most effective model in terms of precision deep learning (LeCun et al., 2015) is frequently described as a "black box" (Olan et al., 2024; Polikar, 2012). Explainability has been recognized as a crucial determinant for the acceptance of AI systems in information systems (Beşikçi et al., 2016; Haque et al., 2023; Meske et al., 2022; Mikalef et al., 2023). The growing prevalence of intelligent systems in various fields such as entrepreneurship and marketing

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has prompted discussions on the need of providing explanations to users, developers, and regulators when decisions are made or recommended by automated systems. This is deemed crucial for practical, social, and increasingly legal reasons.

In B2B service industry, digital technology such as explainable artificial intelligent (XAI) is a critical component of providing high-quality innovative services at every stage of the B2B marketing (Szczepanski, 2019). Considering the B2B expenditures that are in line with market growth may be increased via the use of these value creation levers to a significant extent. As a result, XAI will propel the B2B service industry, giving customers and investors a yield to a new level of service informed by empirical data. The objective of our research is to examine the following study research questions:

Research Question 1 (RQ1): How can a data-driven XAI strategy improve creativity in B2B marketing strategies?

Research Question 2 (RQ2): Assessing the influence of resilience on B2B services.

To address RQ1, we introduce a tree-based ensemble conceptual framework to investigate the significance of resilience in B2B marketing. This framework utilizes data that is relevant to all organizations. Within this theoretical framework, we have defined independent variables that not only serve as manifestations of the B2B marketing mode. In response to RQ2, we use SEM, XAI technology and rule-based interpretations. We analyze the effect of specific characteristics on the rate of growth of resilience and the interaction between the variables. The findings of this research contribute to a deeper comprehension of how XAI impacts on the B2B services resilience and value creation, which in turn affects B2B market performance. The study's results fill in the blanks between theory and reality by elaborating on how to include entrepreneurial innovativeness, technological proficiency, and B2B strategies into the creation of XAI B2B systems. Based on our findings, this study demonstrates that entrepreneurial involvement is a mediator between XAI and value creations in the B2B service industry. Researchers and B2B experts are advised to continue to collaborate with entrepreneurs in building resilience in B2B services by increasing investment in XAI to provide value propositions and boost market performance.

2 Theoretical Background and Hypotheses Development

In B2B marketing, AI plays a key role in enhancing the creative values and overall efficiency of marketing processes. Prior studies have highlighted how AI may enhance B2B service delivery through increasing human capacities, supporting innovation, and brand performance (Bag

et al., 2021; Dwivedi & Wang, 2022; Paschen et al., 2019; Prior & Keränen, 2020). AI technology enables B2B marketing to acquire information, analyze it, and generate well-defined output for B2B entrepreneurs and marketing experts (Moradi & Dass, 2022). AI technologies contain data mining and pattern recognition skills that allow the prediction, analyze and implementation (Keegan et al., 2022). Early attempts to deploy AI technology in B2B service industry were intended to duplicate the activities of the human intelligence and build up a rule based system to support branding and marketing reasoning (Vladimirovich, 2020). Further breakthroughs in AI were focused on duplicating the intellectual role of the B2B marketers.

Hypothesis 1. Technology driven orientation supporting entrepreneurial innovation, social interaction an important factor for technology transfer.

In addition, AI technologies are overcoming many constraints of complexities in the B2B marketing processes (Stone et al., 2020). The application of AI turns analytical insights into cognitive engagement solutions that increase B2B services, improve entrepreneurial innovations, and maximize service efficiency.

2.1 Social Entrepreneurship

According to Kummitha (2017), there is no final agreement about what the word truly signifies for social entrepreneurship, not much has changed. The difficulty in defining social entrepreneurship and the variety of interpretations it inspires are evidence that social entrepreneurship is a contentious notion. Hence, difficulties with definition and lack of consensus on how to measure social entrepreneurship make it difficult to represent the heterogeneity of a unit of analysis in terms of its essential features that have meaningful consequences for outcomes (Kummitha, 2016, 2017). Accordingly, the widely divergent operationalization in the empirical social entrepreneurship literature as argued by Gupta et al. (2020); Peredo and McLean (2006); Phillips et al. (2015); Urbano et al. (2017) can be traced back to the lack of a unified definition of the social entrepreneurship construct. Furthermore, the fuzziness of the term has made it hard to distinguish social entrepreneurship from other phenomena like philanthropy, sustainability, corporate social responsibility, social innovation, and commercial entrepreneurship.

The process of historical development in social entrepreneurial marketing has been shaped in the last four decades. Traditionally marketing and entrepreneurship were considered two different academic majors but there exist a couple of schools of thought in academic communities. This not only shows that social entrepreneurship itself is a developing field of study but also affirms that social entrepreneurship

marketing is still emerging as a new field of academic research.

In the last decade, enhancement of research frontiers on social entrepreneurial marketing, researchers had extended the development of social entrepreneurial marketing in such areas as SMEs, the educational realm, cultural environments, tourism and accommodation, and non-profits and charity organizations (Collinson & Shaw, 2001; Ionita, 2012; Stokes, 2000). But unfortunately, social entrepreneurial marketing application in social enterprises has not yet been studied. From the early social entrepreneurial marketing literature, it was suggested that more suitable applications of marketing in social entrepreneurial contexts is subject to using a conceptual model of marketing processes excerpted from the actions of entrepreneurs.

This research shows the shared characteristics of existing definitions that make it possible to distinguish social entrepreneurship from closely comparable phenomena. This research finds that the key feature of social entrepreneurship (Bacq & Janssen, 2011; Hlady-Rispal & Servantie, 2018; Lehner & Kansikas, 2013) is reflected in the dual aim of creating social and economic value, to better comprehend the diversity of the social idea.

Hypothesis 2. Creating social and economic value that enhances B2B service resilience, taking into consideration the role of XAI.

A social entrepreneur, for instance, exhibits traits typical of entrepreneurs, such as a willingness to take risks, creativity, an eye for opportunity, and a can-do attitude (Bansal et al., 2019; Dufays & Huybrechts, 2014; García-Jurado et al., 2021). A strong moral compass, the ability to make moral choices, and a desire to help others are further signs of a social entrepreneur who is motivated by a sense of social justice (Rawhouser et al., 2019; Sengupta et al., 2018). Similarly, the social enterprise (or social venture) is typically defined as a hybrid organization (Kummitha, 2016) with an explicit social objective (such as improving education, health, nutrition, and safety for excluded, marginalized, or suffering segments of the population) that seeks to create social value while securing profits and doing so in an entrepreneurial/innovative way. Furthermore, social entrepreneurship is the creative use of resource combinations to seek possibilities aiming to create organizations and/or behaviors that deliver and maintain social benefits (Okpara & Halkias, 2011). Rather than being confined to a specific setting, social entrepreneurship refers to innovative, social value producing activity that may occur inside or across the non-profit, commercial, or government sectors (Bacq & Janssen, 2011; Okpara & Halkias, 2011; Peredo & McLean, 2006; Phillips et al., 2015). In this way, actions and procedures done to uncover, define, and exploit possibilities to create social wealth by launching new companies or managing existing organizations in an innovative manner may all be included

under the umbrella term of social entrepreneurship (Urbano et al., 2017).

The majority of the definitions agreed that producing economic value (i.e., innovation through commercial activity) is a required factor for a business to be deemed socially responsible (Bansal et al., 2019; Gupta et al., 2020; Phillips et al., 2015; Urbano et al., 2017). Majority of social entrepreneurship articles focus on highly dissimilar phenomena (such as CSR in for-profits and fund-raising activities in non-profits), making it difficult to make meaningful comparisons between findings within the social entrepreneurship literature. Highly dissimilar phenomena are grouped together under the same conceptual umbrella, even though some of them may not belong there (Bacq & Janssen, 2011).

These hybrid ventures, like social entrepreneurship, aim to be financially sustainable while also addressing a significant social problem; as a result, they face many of the same challenges as social entrepreneurship, such as balancing the entrepreneur's dual identities (Lortie & Cox, 2018; Weerawardena & Mort, 2006) or reconciling competing institutional logics within the hybrid venture (Adro & Fernandes, 2021; van Lunenburg et al., 2020); social entrepreneurship in the context of sustainability has been characterized as the process of identifying, analyzing, and exploiting economic possibilities that are present in market failures that detract from sustainability, particularly those that are ecologically related (Farinha et al., 2020).

Hypothesis 3. Innovation and XAI guarantee an increase in B2B productivity by bringing new inventive service solutions.

Alternatively, as Fellnhöfer et al. (2014) state, research on social entrepreneurship investigates the development of (non-economic) gains for individuals or societies, but it does not include sustaining current economic systems. Entrepreneurship (such as starting a business) is seen as necessary nor sufficient to qualify an actor as an institutional entrepreneur, but institutional entrepreneurs are change agents who initiate divergent changes, that is, changes that break the institutional status quo in a field of activity and thus possibly contribute to transforming existing institutions or creating new ones (Fellnhöfer et al., 2014; Kummitha, 2017; Okpara & Halkias, 2011). In a similar vein, development entrepreneurs work to reform formal institutions in ways that would promote social welfare (Kummitha, 2016). Therefore, the concept of development entrepreneurship is similar to that of social engineers, as defined by (Okpara & Halkias, 2011), who are social entrepreneurs who effect institutional change by modifying pre-existing social structures. While development entrepreneurship may be viewed as a subset of the social entrepreneurship domain, social entrepreneurship encompasses activities that do not aim to fundamentally change existing institutions, such as the social bricoleurs,

who address local issues, or the social constructivists, who develop solutions that can be scaled to larger populations.

Finally, this study argues that social entrepreneurship is the process of launching a hybrid organizational form that creates social value through market-based methods, where new ventures or managing existing organizations in an innovative manner distinguish social entrepreneurship from other forms of pro social or change-driven activities.

2.2 Explainable Artificial Intelligence

One of the evolving abilities for fostering entrepreneurial trust in AI is the use of XAI, which advocates for the engagement of techniques that allow human users to grasp appropriately trust, and correctly manage the coming generation of AI partners (Arakpogun et al., 2021; Olan et al., 2022; Olan et al., 2021). At the beginning of AI evolution, scholars focused mostly on creating algorithms for innovation (Gunning, 2017; Gunning et al., 2019; Olan et al., 2022). The interpretability of a machine learning model is a broad classification criterion (Jean et al., 2008; Keegan et al., 2022; Laurenza et al., 2018). It refers to the ease with which a person can grasp the reasoning behind a model's choice or recreate the XAI's output. A highly interpretable XAI, for instance, would explain to a human why it had reached a certain conclusion. XAI with high interpretability are preferable as a design criterion because, in theory, this can aid in reducing bias in decision-making (by detecting and correcting different types of bias) (Longo et al., 2020), making the XAI more resistant to adversarial perturbations that could alter the prediction, and making better use of observability (Melsom et al., 2022; Mishra et al., 2022; Möller et al., 2020; Olan et al., 2022).

Hypothesis 4. Analytic methods like XAI are used to evaluate the effectiveness of B2B service strategies.

Therefore, it is simple to explain how these XAIs serve their purposes, in the case of a simple decision tree, for instance, the criteria may be explained in such a manner that a human can understand them and re-create the XAI's final conclusion (Nguyen et al., 2021; Papanagnou et al., 2022). In contrast, the topologies of other emerging technologies, such as tree ensembles, support vector machines, and deep neural networks, are too intricate and challenging for most people to understand (Pels & Sheth, 2017; Santoro et al., 2018). The specifics of the XAI's structure, these methods attempt to explain how XAI generates its projections (Becerra-Fernandez, 2000). Introducing and developing a socio-technically informed approach that includes the socio-organizational environment into understanding AI-mediated decision-making, recent developments in XAI have marked a change and developmental step towards socially enabled B2B innovative solutions (Becerra-Fernandez, 2000). To achieve this goal, a socio-technically informed approach

was introduced and explored (Chen et al., 2019), one that takes into account the socio-organizational setting (Ahmed et al., 2022; Bonamigo & Frech, 2020). This shift has borrowed concepts from the social sciences, where an explanation is seen not only as a finished good, but as a social activity including interaction between people and the flow of information from one to the other. Trust, troubleshooting or design, teaching, action, justification, aesthetics, and communication are all highlighted as primary goals in explanation in a recent research by Becerra-Fernandez (2000), who analyze a wide range of explanations from the standpoint of cognitive science.

Bonamigo and Frech (2020) suggests considering the specifics of the entrepreneurs and B2B experts, the nature of the task at hand when deciding on the explanation on implement the use of XAI for B2B marketing. This shift has been aided by user-centered approaches and methodologies from the human computer interaction (HCI) community, which have shown that various AI techniques are as effective as assumed in facilitating sensemaking (Chen et al., 2021; Dwivedi & Wang, 2022; Jean et al., 2008), boosting user trust, or allowing for actionable decisions.

2.3 B2B Marketing, Resilience and Digital Value Creation

Despite B2B marketing research's relative obscurity in the marketing discipline, it has been a fascinating and transformative path, and a wealth of marketing literature is available today. Many distinct avenues have contributed to the evolution of B2B marketing theory. Connecting the evolution of B2B transactions to the three phases of market development—the pre-industrial, industrial, and post-industrial eras (Cortez & Johnston, 2017; Paschen et al., 2019; Seebacher, 2021).

However, a significant portion of the research, particularly in the field of B2B marketing studies, remains concentrated on the manufacturing sector due to its product-oriented implications and historical roots, akin to the conventional emphasis of marketing on commodities (Hadjikhani & LaPlaca, 2013; Keegan et al., 2024). Notwithstanding the fact that B2B marketing literature is beginning to redirect its focus towards prospects for value generation centred around services. Our contention is that B2B marketing should adopt a more comprehensive perspective on services within this setting. Furthermore, B2B marketing research could gain advantages by integrating perspectives from services marketing. B2B services, encompassing professional business services, banking and insurance, business process outsourcing (BPO), and other information, communications, and technology (ICT) services, are the fastest growing areas of the global economy. However, the expansion of services in manufacturing companies is currently a very dynamic area

in the field of B2B marketing (Harrison-Walker & Neeley, 2004). Therefore, it is crucial to broaden the concept of B2B marketing outside the domain of manufacturing (Chong et al., 2018; LaPlaca & da Silva, 2016).

The concept of resilience is founded upon five fundamental components: mindfulness, self-awareness, purpose, strong relationships, and self-care (Annarelli & Nonino, 2016; Bhamra et al., 2011). The renewed focus on resilience has emerged, in part, as a reaction to certain unforeseeable events that have triggered types of marketing policy responses. Moreover, we are particularly interested in the potential of resilience as 'adaptable capacity' since it refers to the unique ability to adapt to changes and shocks in significant, market, technical, organisational, and other factors that influence the transformative aspects and directions of that geographical or neighbouring economy (Boin & Van Eeten, 2013; Tengblad & Oudhuis, 2018). Therefore, this research will specifically examine the characteristics of marketing resilience in response to the challenging changes in social entrepreneurship marketing strategy.

Value creation was initially defined and emphasized by Panagiotopoulos et al., (2019), focused on interactions between a firm and its customers. However, (Pagani, 2013)'s concept of value creation centered on services and service delivery systems. Reddy and Reinartz (2017) addressed the issue of how value should be created and what results might be expected from doing so. As claim by the aforementioned that the integration of current resources accessible from a range of B2B service systems may facilitate value creation, which in turn will improve system innovativeness. Scholars clarify the nature of value creation and characterize it as an ongoing activity (Amit & Han, 2017; Matarazzo et al., 2021; Opute et al., 2020).

In addition, the value creation literature gained three new definitions credited to the work of (Saunila et al., 2017). Value creation, as emphasized by Matarazzo et al. (2021) is not limited to only issue-solving but is also essential for initiating innovation.

Hypothesis 5. Finding the balance between value-in-use with necessary sacrifices and innovation for B2B services resilience.

2.4 Conceptual Framework

The conceptual framework promoted experiences above value creation by endorsing experience construction and the development of an experience environment as goals of value addition (Corsaro & Anzivino, 2021; Häikiö & Koivumäki, 2016; Huarng & Rey-Martí, 2019). The definition of value creation offered by Corsaro and Anzivino (2021) argued value creation as a preferred transformation realized by numerous organizations. With this interpretation, value creation encompasses a wider sphere the more people or organizations are engaged. However, according to Amit and Han (2017), value creation is the process through which customer-perceived value is generated via interaction, collaborative or personalized actions for and with stakeholders. Furthermore, Huarng and Rey-Martí (2019) contributed new definitions to the value creation literature, though distinct, there were some commonalities among all definitions, value creation was defined in a number of ways as shown in Fig. 1. The importance of social systems and networks in the process of value creation was emphasized by the scholars cited above. Possible results of the value creation process were reported to include the reproduction of social systems as well as the development and distribution of goods or services. Value creation was conceptualized by Opute et al. (2020), as argued that it as a means by which several players pool their resources to find solutions to a common issue. Furthermore, Matarazzo et al. (2021) original concept hinged on the idea of balancing value-in-use with necessary sacrifices.

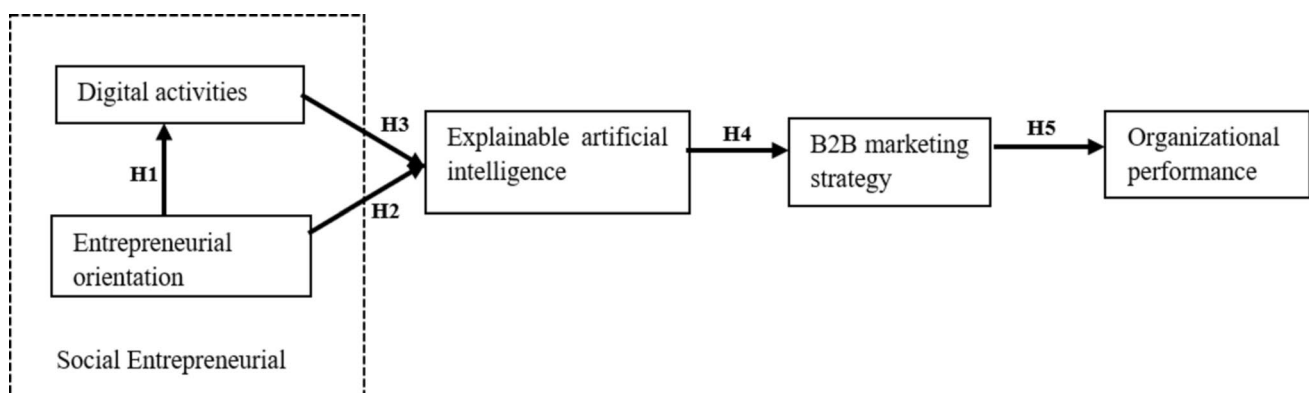


Fig. 1 Conceptual framework

3 Research Method

3.1 Research Design and Data Collection

Matarazzo et al. (2021); Paschen et al., (2019) argue that XAI emerging as a game-changing technology. It's probable that XAI's potential disruptive effects will vary widely among sectors. Thus, to conduct an empirical study on the topic of social entrepreneurship in B2B service industry, it is necessary to identify the various types of activities and processes that are most likely to be impacted by XAI, as well as those activities and processes that the technology is most likely to affect only slightly or not at all. By considering whether the B2B experts and entrepreneur's knowledge can be readily conveyed back to the B2B service industry and whether or not the cause-and-effect link with the information is understood, Olan et al., (2021) assessed the notion. XAI's fundamental sources and components, as well as their complex interplay in generating B2B marketing performance. XAI was dissected by Longo et al. (2020) into its constituent pieces, which the scholars termed tacit and causal XAI. The former deals with questions about how to put the XAI to use, while the latter focuses on doubts about the information itself.

This study investigates relevant approaches for assessing XAI technology from the perspective of the social entrepreneur and B2B experts that is the recipient of the strategy rather than the challenges that is the source of the technology transfer. It is vital to evaluate the role of entrepreneurs while debating the most suitable techniques for assessing B2B strategies with XAI, since various studies evaluate value creation in different ways based on their study aims and environment. This is consistent with what is said by Kummitha (2017), who distinguish between uncertainty about the content of entrepreneurial orientation and uncertainty regarding XAI application.

This study used an online survey to gather information from AI experts, B2B experts, and social entrepreneurs all around the globe in B2B service industry and artificial intelligence. Each participant was invited using Qualtrics. A total of over 401 people participated in the survey. Professionals, specialists, and researchers with at least five years of experience working in artificial intelligence (AI), entrepreneurship, and B2B marketing were of particular interest to the research. Experts in the domains of technology adoption, B2B marketing, and entrepreneurship examined and assessed the survey, and the participants were informed of the study's goals. After the online survey was over, 295 people completed the questionnaires, for a total response rate of 74%. Initial testing was performed on 12 separate samples before we began gathering all of the data. Our conceptual framework suggests that there are at least two distinct builds

for each perspective. This study used a seven-point Likert scale during data collection to examine factors including complementarity and equifinality. There was a wide range of responses possible, from "strongly disagree" (1) to "strongly agree" (5). The data analysis was performed using structural equation modeling (SEM).

3.2 Measures

To operationalize XAI, this research adapted Dion (2008) as follows: It is important that entrepreneurial orientation has a XAI infrastructure that is both robust and efficient for the purpose of B2B strategy, as well as a cooperative structure in learning that can identify and evaluate the potentially useful knowledge that is being transferred.

Various methods have been used in previous research in attempt to put a numerical value on XAI. Apostolidis et al. (2022), for instance, argued relational capital investment as the amount of mutual trust, respect, and friendship that resides at the person level between alliance partners. This notion informs the creation of five distinct metrics for gauging relationship capital. High levels of mutuality, intimate personal connection, mutual respect, and mutual trust are all examples of these indicators. Social entrepreneurship, XAI, and sustainable B2B marketing are the three pillars on which Adro and Fernandes (2021); Amit and Han (2017); Angelov et al. (2021) built an operationalization of the idea. Bonamigo and Frech (2020) defined "*strategy flows*" as the "*relational rent*" created in an exchange connection that neither business could earn alone. Trust, openness, and cooperation between social entrepreneurs and B2B experts were proposed as the three pillars of the relational capital framework by Granados et al. (2010). XAI relational capital is a multifaceted notion that describes interactions that lead to mutually beneficial outcomes for participating B2B service organizations.

4 Data Results

The next stage entails identifying and assessing XAI-related aspects that are likely to have an influence on the resilience of B2B service industry, as shown in Fig. 2. To account for indirect effects while still including several predictors and dependent variables, this study used path analysis, a latent variable-free structural equation model. IBM SPSS AMOS 28 served as the platform for developing the model. There were 5 internal variables in this model and 5 external nodes (entrepreneurial orientation was only exogenous). With this route analysis, to simulate underlying causal connections in the result.

Table 1 presents a summary and breakdown of the potential impacts of these factors.

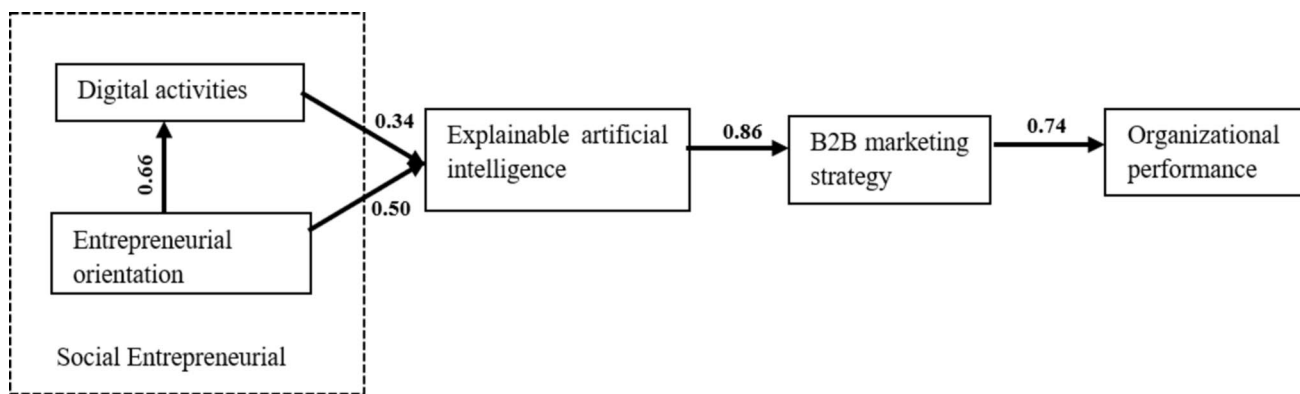


Fig. 2 Structural Model

Predicted stages of development for the factors affecting B2B service resilience are shown in Fig. 2. How much XAI resembles a protected creative work like human intelligence is determined by its intellectual property status. The degree to which a product conforms to a specified technical standard as published or anticipated in the industry is a direct indication of the level of standardization present in the relevant engineering, methods, processes, and practices. These criteria may be set or assumed. Oftentimes, new industry standards are developed by firms, regulatory agencies, or trade organizations. Example: generally, it's obligatory to adhere to the minimal safety standards for electrical items. All of hypotheses demonstrate in this study path model, and the regression weights point to a statistically significant causal link between the suggested pair of variables.

A number of metrics to evaluate the model's performance as shown in Table 1. Our CMIN/Df of 2.003 is less than 5, but closer to 3, suggesting an acceptable fit (Kline, 2015), while our GFI of 0.997 and AGFI of 0.959 are both higher than 0.95 (good) or 0.9 (decent) (Hu & Bentler, 1998; Lin & Hsieh, 2010). RMSEA is 0.058 and falls below 0.08, indicating an adequate it (MacCallum et al., 1996). As absolute fit indices are close to the required criteria, the model is very close to being absolutely fit. In addition, all incremental indices are above 0.95, suggesting a good fit to the data: NFI=0.997, CFI=0.999, TLI=0.986, and IFI=0.999 (West et al., 2012). All of the necessary indices have been met; therefore the model may be considered progressively fit.

Measures of the most parsimonious fit converging with the recommended thresholds of 0.5. The model is absolutely, and incrementally fit, Parsimonious fit measures are deviating from the suggested 0.5 or above cut-offs. PCFI and PNFI are both 0.100, indicating that although the model is absolutely and incrementally fit, is not parsimoniously fit as indicated in Table 2.

where:

Table 2 Standardized Regression Weights

			Estimate
Digital_activities	<--	Entrepreneurial_orientation	0.660
XAI	<--	Digital_activities	0.344
XAI	<--	Entrepreneurial_orientation	0.496
B2B	<--	XAI	0.861
Resilience	<--	B2B	0.739

NPAR Number of Parameters for each model (default, saturated, and independence).

CMIN Chi-square value. If significant, the model can be considered unsatisfactory.

Table 1 Regression Weights

			Estimate	S.E	C.R
Digital_activities	<--	Entrepreneurial_orientation	0.676	0.045	15.078
XAI	<--	Digital_activities	0.335	0.048	6.914
XAI	<--	Entrepreneurial_orientation	0.494	0.050	9.964
B2B	<--	XAI	0.886	0.068	13.032
Resilience	<--	B2B	0.520	0.067	7.714

Table 3 GFI in Model Fit Results

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	14	2.003	1	0.157	2.003
Saturated model	15	0.000	0		
Independence model	5	729.971	10	0.000	72.997

DF Degree of Freedom measures the number of independent values that can diverge without obstructing any limitations in the model.

P the probability of getting a discrepancy as large as CMIN value if the respective model is correct.

CMIN/DF discrepancy divided by degree of freedom.

SEM AMOS computations also included calculating modification values to enhance the model's fitness. The modification indices inspired us to include new covariances in the model. As shown in Table 3, the fitness indices for the altered route model. The term "access" is used to describe the ease with which social entrepreneurship initiates competitive services because of the availability of appropriate XAI and tools. Access to value creation through emerging technology may be depending on a digital activities, standard level, or other considerations.

5 Discussion

The emerging technologies and the sites of significant digital activities remain as significant pivot for value creation in B2B marketing. Hence, bringing a shift toward decentralized innovation ownership and management in social entrepreneurship, leading to less centralized value creation in B2B services. As XAI becomes more ubiquitous, also conceivable that performance and resilience will be significant to the strategic level, with social entrepreneurs fostering innovative services in B2B (Mishra et al., 2022; Olan et al., 2022; Pagani, 2013; Weerawardena & Mort, 2006). Changes in the global distribution of economic activity greatly favor the B2B strategy model (Amit & Han, 2017; Kummitha, 2016; Pels & Sheth, 2017). Häikiö and Koivumäki (2016) argue that as value creation accelerates, the locations of major B2B economic hubs will likely undergo yet another change. This kind of value creation will remain widely dispersed across both established and developing social entrepreneurs.

XAI can be characterized by the trend toward specialization of building resilience and innovate B2B service industry with agility to tackle crisis such as the COVID-19 pandemic (Adadi & Berrada, 2018). It is inevitable, however,

that specialization will shift from the level of large B2B organizations to that of individuals or smaller businesses, leading to a less centralized value creation. Several aspects of XAI stand to be simplified if more social entrepreneurs are embracing emerging technologies such as XAI for value creation, both for small businesses and commercial establishments in B2B services (Muñoz & Kimmitt, 2019; Panagiotopoulos et al., 2019). Thus, as anticipated that value creation channels would becoming more compact (Saebi et al., 2019; Sigala, 2019). It is likely that developing social entrepreneurs will continue to opportunities to be more innovative with more accessibility to emerging technologies such as XAI (Grewal et al., 2020; Gupta et al., 2020; Mangus et al., 2020), especially value creations that are characterized by factors that are mentioned above as being positively connected with B2B marketing.

It is expected that economies of scale will benefit the traditional, decentralized, mass distribution of a diverse range of value creation with emerging technology. In the long run, as conceivable that value creation and emerging technology are complementing one another (Phillips et al., 2020). However, given to the stronger economic and technical capabilities of established B2B service organizations and rising markets to incorporate emerging technology, a huge number of new value creations will be made at the B2B entrepreneurial marketing level, in innumerable businesses all over the globe.

Emerging technologies are more likely to be adopted by B2B businesses with high per capita purchasing power for parts, components, and know-how (Matarazzo et al., 2021). How rapidly a new technological innovation spreads depends on the receptivity of consumers in different countries. Users' perceptions of the technology's usability and their level of comfort using cutting-edge tools are crucial to its eventual success.

Potential consumers in developing countries may be put off by a lack of available funds or a perception that the technology is excessively difficult. There are more and more situations when highly specialized B2B expertise is unnecessary. Because of improvements in technology and increased B2B services volume, the price of these emerging technologies will drop over time, making them affordable to a far wider consumer. Relocating technology facilities for a wide variety of services to the local level has further implications. Because of the greater adaptability to change that comes with XAI, standardized B2B service efficiency will suffer. In a world dominated by constant emerging technologies. Thus, value creation may mitigate the trend toward shopper preference and consuming culture homogenization. In this sense, XAI has the potential to greatly improve value creation in B2B service industry that are constantly facing evolution of emerging technologies (Apostolidis et al., 2022). A large part of this impact will be attributable to the technology's

ability to work around the underlying B2B policies flaws that are characteristic of competition.

6 Implications and Conclusion

6.1 Implications for Research

This research is among the first studies that offer a theoretical explanatory framework for the role of resilience and XAI in driving B2B marketing in social entrepreneurship. Moreover, this paper explores the interaction between social entrepreneurship and B2B marketing, specifically focusing on the transition from B2B marketing for manufacturing to service solutions. The results contribute to the theoretical comprehension of the function of resilient and XAI in promoting B2B marketing for social business enterprises.

Several future study topics might be followed to deepen understanding of AI-business value research in cross-cultural B2B environments, all of which build on the conceptual framework presented in this article. The first chance is to put the ideas in this paper to the test in the real world. Additionally, other value creation channel interactions may be analyzed, including other types of entrepreneurs and outsourcing partnerships. Scales for gauging technology integration, XAI capabilities, business processes, and business resilience aspects have been created in recent research (Apostolidis et al., 2022; Papanagnou et al., 2022; Shams et al., 2022; Zhao et al., 2022). Incorporating these measures into cross-sectional and perhaps B2B marketing survey research is feasible. The benefits of conducting longitudinal research outweigh the difficulties of putting them into practice. These might help us learn more about the connections between XAI, value creation, and entrepreneurship. Examples include the claims by Keegan et al. (2022); Matarazzo et al. (2021); Olan et al. (2022) that the influence of XAI on value creation may be a result of entrepreneurial innovation.

Second, research from the last several years suggests that social entrepreneurship and innovation may have divergent perspectives on the roles that XAI plays in facilitating B2B service resilience. Social entrepreneurs are more interested in utilizing XAI as a tool for value creation, while B2B experts are more inclined to utilize XAI as means for discovering new and emerging opportunities in B2B marketing (Pandey & Kumar, 2021). Considering this, it will be important for future empirical study to include both the entrepreneurial and marketing points of view. In addition, expanding this study from a network viewpoint that considers focal enterprises, mainstream marketing, and downstream consumers will be significant.

6.2 Implications for Practice

Researchers inspire that B2B managers and social entrepreneurs in B2B innovation space will find this study useful. Based on this research, it is concluded for B2B businesses to establish fruitful emerging technologies driven value creation, especially when doing business across many countries and cultures. B2B companies might become stuck in the "virtuality trap" described by Melsom et al. (2022). To achieve the appropriate levels of control, coordination, and learning among their channel partners, businesses must take advantage of varying degrees of XAI, depending on data consistency and system integration.

To develop relational embeddedness between partners and standardized business processes in the B2B service industry, it is essential for companies to invest not only in technology infrastructures but also in other organizational resources. XAI fundamentals are essential for the efficient management and upkeep of all an B2B organization's emerging technology capability. Instead of relying on outside firms, businesses should invest in the training and retention of in-house value creation strategies. If not, rivals will likely copy your strategy, and you'll lose your edge in the market.

XAI is a conceptual framework designed to facilitate comprehension and analysis of AI algorithm predictions. Applied AI can analyze datasets in B2B marketing to identify and monitor various overlooked opportunities, therefore enhancing performance. An effective approach to harness the capabilities of resilient and XAI is by leveraging the growing field of data mining and analysis, and by integrating human and AI technologies.

Finally, the internal environment (interdependence structure between partners), external environment (environmental uncertainty), and cultural and other country level environments all play a role in the success of leveraging XAI capabilities to support management of international B2B service businesses and achieving competitive advantage. Social entrepreneurs may only add value to strengthening their channel operations and capabilities in the international market if they have developed adequate and relevant technology capabilities to match the external environment demand.

6.3 Limitation and Future Research

This research presents limitations which call for further investigation. Initially, we evaluated our research methods employing a singular data analysis tool. Consequently, our datasets provided merely a glimpse into respondents' social entrepreneurship, artificial intelligence, and marketing. Future study could incorporate participants from more fields engaged in the research setting.

XAI grounded on data processing may induce immediate alterations in innovation and marketing through B2B

services, while those founded on systematic data processing may yield enduring consequences. The enduring impact of AI developments on social enterprises has managerial implications that quantitative research cannot swiftly ascertain.

We demonstrate that a greater innovative impact requires time to accrue and will influence social enterprise marketing differently during transformational transitions. Specifically, creative effects may exert a diminished influence on perceived resilience during the initial phase of the B2B marketing transition, as enterprises adopt transformative innovations. The innovative impact effect may intensify as both the number and intensity of impact factors rise. Future studies should identify and observe the growth and impact patterns of social enterprises to assess their resilience and evaluate the longitudinal effects on B2B services across the phases of social entrepreneurial marketing.

Ultimately, we evaluated our research model using datasets from a population sample that emphasized value-related impact across several B2B service categories, company sectors, and innovation uptake. Interpretations of contemporary findings for different countries and industries must be conducted with precaution. Enterprise's resilience capabilities differ significantly. Consequently, researchers should investigate how resilience and responses to technology adoption vary across different sectoral orientations in preparation for B2B service transformation.

7 Conclusions

By merging XAI and value creation into a more comprehensive framework, and by integrating multiple viewpoints on entrepreneurial orientation, and B2B marketing strategy, the conceptual framework offered in the current research contributes to the B2B marketing, entrepreneurship, and AI literature. With this model as a starting point, to discover if and how B2B businesses that integrate XAI into their global strategy may gain a competitive edge in the marketplace. This conceptual framework allows for several inferences to be made. To begin, incorporating XAI into a B2B company's worldwide value creation is not an easy undertaking, but rather one that requires significant investment of time and resources. This study suggests that a B2B company's worldwide value creation requires more than just the use of AI systems to facilitate global coordination and management. When combined with value creation and entrepreneurial resources, B2B service business has the potential to strengthen and reorganize several aspects of corporate operations, such as coordination, absorptive capacity, monitoring, and asset specificities. This, in turn, may reduce opportunism on the side of foreign partners and boost operational and strategic performance within the organization. This perspective helps clarify the ongoing discussion about how

significant XAI really is to building B2B resilience (Onjewu et al., 2022).

This research gave reasons, based in the arguments and results of the literature, that various social entrepreneurial value creation and XAI elements might influence B2B practices in an environment and limit the effect of such IT skills on international B2B operations. In particular, cultural factors like communication context of culture, power distance, and collectivism are likely to play a crucial role in appreciating the value of in-person interactions within a culture and, thus, in appreciating the potential effects of XAI capabilities on enhancing international B2B processes.

Finally, our suggested model's key idea is that the XAI-business value generation process is shaped by both internal and external environmental factors. While most studies to date have concentrated on local channel settings, when operating on a global scale, it is necessary to analytically account for factors such as partner dependency and environmental unpredictability.

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