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Market, entrepreneurial orientations, and information system use: A systematic literature review

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ABSTRACT

This ADO-framework-guided systematic literature review looks at the complicated connections between market orientation (MO), entrepreneurial orientation (EO), and the use of information systems (IS). It aims to elucidate the empirical linkages among MO, EO and IS use. Since commercial software was introduced in 1954, entrepreneurs have deliberately integrated IS modules to optimize business processes. The study examines IS development and its impact on company strategies. MO, EO, and IS use are crucial to company success in today's competitive environment. Major IS development players value exceptional modules and argue for tailored solutions to address off-the-shelf system issues. PRISMA and SPAR-4-SLR are rigorously applied to the study in order to identify significant literature contributions. By using Web of Science and Scopus, the process emphasizes strict selection and quality standards. This study illuminates market and entrepreneurial perspectives, particularly concerning IS activities. The literature review offers theoretical guidance for enterprises, policymakers, and IS designers. Stakeholders can support entrepreneurs in integrating IS by aligning strategy with market dynamics, prioritizing user-centric design, encouraging innovation, and adapting to technology. Collaboration between IS developers and entrepreneurs, facilitated by supportive legislation, enables the realization of practical implications for fostering dynamic and resilient digital enterprises. Theoretically, we contend that IS adoption and strategy are contingent upon collaborative efforts in strategic entrepreneurship and marketing. Consequently, we contend that an examination of IS should extend beyond conventional and well-established technology acceptability frameworks.

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1. Introduction

The term "information system architecture" (ISA) refers to the business operations and rules, system organisation, technological structure, and product technologies required by a business or information system (IS). Any company's IS architecture can be viewed as a design outlining how the data processing system, telecommunications networks, and data are integrated (Lyytinen, 1987). It gives a summary answer to the following questions: Where should data be stored? What information is gathered? What methods were used to collect the data? Which applications use the data, and how do they fit into the larger system? How is the data transmitted? To answer those questions, one must first understand the components of an IS, which include hardware and software, people, business processes, networks and communication components, databases, and storage devices (Laumer & Eckhardt, 2012).

People, processes, procedures, and technology are the critical components that must work in harmony to acquire data from the market and entrepreneurs who understand customer requirements. By properly leveraging these components, businesses can stay ahead of the competition and succeed in the market (Thomas, 1998). To remain agile as well as responsive to market developments, businesses must not only collect data but also analyse and act on it promptly. Businesses with excellent information technology (IT) strategic alignment can use technology to improve processes and make data-driven, data-inspired decisions that promote innovation and growth (Morimura & Sakagawa, 2023).

Market and entrepreneurial orientations (MO & EO) are two crucial strategic orientations for organisations that must be successfully innovated and grow through the data and information gathered, as well as IT business strategic alignment that complements and consolidates MO and EO. Market orientation emphasises addressing customer demands and preferences, whereas entrepreneurial orientation entails taking chances and seeking new opportunities (Lumpkin & Pidduck, 2021). By combining these two approaches with data and information technology, businesses can make strategic decisions that drive market growth and competitiveness. This alignment enables businesses to better understand market demands and trends, resulting in the development of products and services that are in line with client preferences (Kohli, 1999; Mahmoud & Hinson, 2012). Finally, a mix of MO and EO, supported by IT strategic alignment, can enable organisations to achieve long-term success and adapt to a quickly changing business environment (Al-Jaafreh et al., 2023).

Most entrepreneurs often begin with legacy IS such as mainframe, spreadsheets, and somewhat famous Microsoft Excel in separate modules, then add or remove subprocesses and activities that the new IS will replace (Rawat, 2023). For instance, General Electric developed the first commercial software, a payroll application which is a single module in 1954 (Menell, 2019). Since then, software for programming computers has progressed rapidly, with few extensive studies examined in the business arena that combined numerous modules into a unified single system, from payroll applications (legacy systems) to enterprise resource planning (ERP). The ERP system uses relational databases to communicate with other databases to retrieve data from one module and integrate it with data from other modules, allowing for a seamless flow of information across the organisation. This integration streamlines business processes, improves decision-making, and enhances overall efficiency (Baruti, 2023). Additionally, ERP systems can provide real-time data access, automate routine tasks, and generate comprehensive reports for better analysis and forecasting. In today's digital age, ERP systems have become essential tools for businesses looking to stay competitive and adapt to ever-changing market conditions (Vuković et al., 2023).

A brief history, in the 1970s, a language that separated programs into programme-related databases was used for software development (Al-Amin et al., 2023). During the 1980s, database engineers transitioned from application-specific databases to relational databases, facilitating the linking of applications and the availability of data for anticipated purposes (Gröger, 2022). Thomas Devenport, a consultant who pioneered business process overlay reengineering in the early 1990s, believed that packaged application strategies helped organisations integrate and develop their IT systems

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(Swaminathan & Rajarathinam, 2018). However, entrepreneurs working on the application process only need to know how to enter data and get output to make data-driven decisions (Gupta et al., 2023).

Additionally, in the mid to late 90s, market forces prompted salespeople to carry laptops, and the internet around because the World Wide Web led businesses to network all their computers to share data in real-time and when needed (Stefanov et al., 2023). In the 2000s, the integration of all components in a single device resulted in a considerable shift towards mobile devices and smartphones as key methods of accessing the Internet and performing m-commerce and e-commerce (Kraemer et al., 2006). Technological advancements, such as the development of broadband internet and the rise of mobile devices, have enabled faster data transfers and expanded online services (Aggarwal et al., 2023; Ashraf et al., 2021). This led to the emergence and increasing popularity of social media platforms during the internet era, significantly changing the ways in which entrepreneurs and businesses communicate, share information, and interact with the market (Lee et al., 2022).

The expansion of digital commerce has continued, with companies like Amazon expanding their offers and online purchasing becoming increasingly popular (Oliva et al., 2003). This also caused the rise of cell phones to transform communication and information access, with the introduction of the iPhone in 2007 transforming touchscreens and mobile applications. Mobile technology has become integral to both entrepreneurial and marketing activities (AlFahl, 2023; Goggin, 2009).

Nonetheless, computing in the cloud has enabled organizations to store and access data and apps via the Internet, providing scalability, flexibility, and cost-effectiveness (Wang et al., 2023). Analytics and big data organizations began creating massive amounts of data as operations became more digitized (Li et al., 2020). Consequently, the emphasis on big data analytics has helped organizations gain insights and make data-inspired decisions based on enormous datasets (Shah, 2022).

Due to the fourth industrial revolution, globalization and remote employment accelerated in the early 2000s, aided by digital technologies, allowing companies to increase their global reach, and remote work became increasingly practical as connection and collaboration tools improved (Aslan & Kumar, 2021; Wood et al., 2023). Thus, continued software development has progressed, emphasizing user-friendly interfaces, interoperability, and seamless integration (Atem De Carvalho, 2006). Meanwhile, agile processes have grown in popularity, leading to increased efficiency and productivity in the industry (Martinez-Sanchez & Vicente-Oliva, 2023). Nonetheless, emerging technology developments such as artificial intelligence (AI), machine learning, and the Internet of Things (IoT) have also gained traction, presenting new opportunities and constraints in the field of software development (Manosalvas et al., 2023).

The study is grounded in the ADO framework to analyse the impact of people, processes, and technology on the formulation of decisions and outcomes. This framework can be used for descriptive, predictive, and prescriptive exploration. Utilising the ADO framework will allow us to gain a comprehensive understanding of how these factors interact and influence decision-making in the technology sector (Koi-Akrofi et al., 2023). By conducting both descriptive and predictive analyses, we will be able to not only identify current trends and challenges but also anticipate future developments and potential solutions. The prescriptive aspect of our study will provide actionable insights to help researchers effectively navigate the complexities of today's rapidly changing technological landscape (Horani et al., 2023). Through our research, we hope to contribute valuable information that can inform strategic decision-making and drive innovation within the industry.

The paper aims to conceptualise the integration of MO and EO, and their implications on IS use and adoption. First, we highlight the relevance of the research in the academia, the gap in the literature, a brief understanding of the theory used, the methodology used, and the researchers' key findings. Then, in the discussion and conclusion section, we discuss the implications of the theories, the research limitations, and make future research recommendations.

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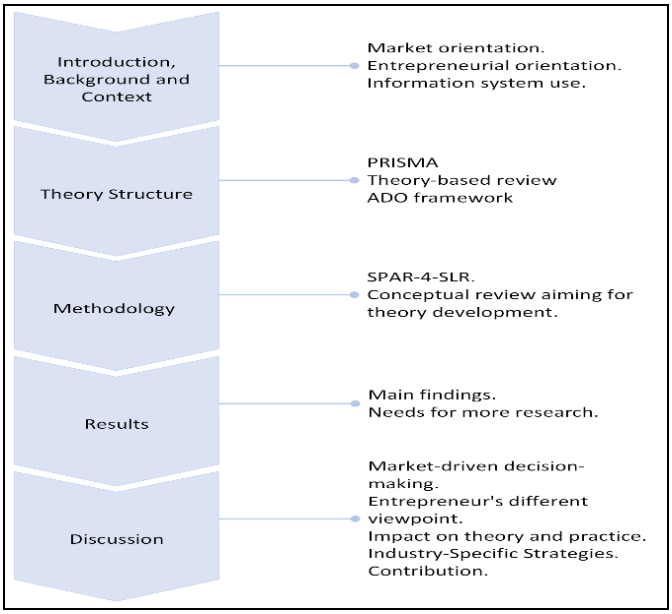

Fig 1. Anatomy of the study
(Source: Authors)

2. Background and context

In today's competitive business world, companies must find strategies to gain a competitive edge and succeed long-term. MO, EO, and IS utilization are key success drivers, affecting innovation, customer interaction, and decision-making (Hernández-Perlines et al., 2021). Entrepreneurship, especially in IT, has changed drastically, and entrepreneurs start by reviewing their IS procedures to eliminate superfluous subprocesses and activities that new IS would replace (Wales et al., 2021). This leads to the complex relationship between entrepreneurial mindsets, market competitive dynamics, and IS use that affects business processes and the entrepreneurial landscape (Jaworski & Kohli, 1993; Mahmoud & Hinson, 2012).

Investigating the big names in IS development, such as SAP, Microsoft, and Oracle, they call their modules "exceptional" and focus on important processes that add value. However, Cosenza & Bivona (2021) indicate that most business owners still think in terms of steps, phases, and goals. Entrepreneurs and software developers must collaborate on a mind map to establish tailored IS. Meanwhile, researchers indicate that few database programs are employed by entrepreneurs to implement non-routine procedures and adapt IS to their company practices (Aamer et al., 2023). In terms of tailored IS, off-the-shelf IS deteriorates quickly, increasing maintenance costs (Thomas, 1998). Consequently, a new IS edition requires organizations to upgrade their systems to include new features, making the prior version of the system ineffective (Ng & Chang, 2009).

Meanwhile, other researchers indicate that today's software engineers and entrepreneurs approach applications differently, focusing on efficient, valuable processes and avoiding superfluous subprocesses that may not add significant value to the end product. This shift in mindset has led to a more streamlined and user-friendly experience for consumers, ultimately positively shaping market outcomes. By studying these trends and behaviours, researchers can gain valuable insights into how IS use is evolving and its potential implications for the market. In doing so, we can continue to push the boundaries of knowledge in this field and drive innovation in the market. (Kovaleva et al., 2023; Yulianto et al., 2020).

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2.1 Integration of MO, EO, and IS use

Market orientation (MO) is a strategic approach that prioritises client and customer needs and helps businesses (Hamzah et al., 2020a). Meanwhile, for businesses to stay ahead of the competition, it involves understanding customer preferences, behaviours, and trends through market research and product development (Sihvonen et al., 2021). Furthermore, entrepreneurs play a crucial role in creating customer-focused products that meet basic needs and wants. This approach boosts customer satisfaction and loyalty by targeting the right audience through customer knowledge acquisition (Ranka & Vasudevan, 2022; Hamzah et al., 2023b). Nonetheless, market-oriented companies use appealing language to communicate their products and build trust with their target audience (Chen & Arnold, 2022). However, communication via IS requires regular data input to respond to market changes, and effective MO necessitates monitoring competition, market changes, and customer feedback. For MO adoption, proactive management with IS is critical (Dabić et al., 2023).

Entrepreneurship orientation (EO) is a multidimensional strategic concept that encourages risk-taking, innovation, and proactiveness (Singh & Mehdi, 2022). EO is an organisation's ability to use entrepreneurial concepts in strategic decision-making, with innovativeness, proactiveness, and risk-taking as variables (Chabaud & Sattin, 2019). Thus, innovation involves trying new things and creating new goods, services, processes, and procedures, while proactiveness allows businesses to shape their environment rather than respond to market changes (Koi-Akrofi, 2023). Furthermore, economic advantage, proactive opportunity pursuit, and long-term success are critical to entrepreneurship. Likewise, creative thinking helps organisations overcome competitive difficulties while being customer-focused and proactive. (Bender-Salazar, 2023). Consequently, EO may enable disruptive innovation and impact digitalization strategy planning and implementation (AbuAkel & Ibrahim, 2023).

IR4.0 (industrial revolution 4.0) and technology improve the expansion of online companies' footprints on social media, establishing goals and gradually addressing restrictions that can assist firms in adopting new technologies by following the trends (Dabbous et al., 2023). Meanwhile, some entrepreneurs may impact operational strategy and competitiveness by considering budget limits and justifying the existence and resource allocation of organisations to compete with trends. (Eniola, 2021). MO, EO, and technology are critical components of business strategy that enable organisations to expand and prosper. Companies can achieve long-term success and competitiveness by prioritising client demands, employing innovative thinking, and managing flexibility by integrating the use of IS (Iglesias-Sánchez et al., 2022).

Practically, entrepreneurs must carefully build the company's IS to maximise value (Pimenta da Gama, 2023). As a result, entrepreneurs must quickly assess initiatives and identify success through innovative approaches required for continual improvement and organizational performance (Reyes-Gómez et al., 2024). Nevertheless, entrepreneurs must consider the following: find ways to constantly improve, set measurements and targets, stretch objectives, record and share company news, assess business technology impact, approach difficult issues strategically, use input well, connect theory to practice, spread strategic information, use innovative ideas, and gain new insights to boost performance. Understanding how these aforementioned factors interact is essential for informed decision-making and organisational success (Abadía & Avila, 2023).

3. Relevance of the research problem

The significance of this research lies in the fact that the findings and two main questions discussed in it (How do entrepreneurial decisions affect information system use? What happens when the market, entrepreneurial orientations, and information systems interact?) can be applied to situations that occur in the actual world. Researchers state that information management is the use of information features and functions to boost firm performance. According to Horani et al. (2023), information management has a significant impact on company success and is associated with factors such as time, money, and both

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implicit and explicit knowledge. Information resource models stress their importance across company activities, while information becomes crucial throughout, enterprise change due to its significance in transformation assets (Dutta et al., 2021). Other researchers proved that both tangible and intangible information assets are increasingly important in business models. The method of using software as a tangible asset must change to modernise dynamic systems (Bazan & Estevez, 2022).

From other researchers' points of view, technical advances often accompany information management advances (Kitsios & Kamariotou, 2023). Researchers suggest that modern entrepreneurs must protect proprietary information as a valuable corporate resource and ensure that the IS appropriately reflects the company's current situation (Xia et al., 2022). Findings suggest that decisions based on outdated or inaccurate information may hinder efficacy and success (Adam et al., 2021). Nevertheless, information is critical to an entrepreneur's long-term competitiveness. Thus, organisations must invest in information resource management and use, such as IS, because it is an asset that needs to be studied, understood, and applied (Crick & Crick, 2022; Zhang et al., 2023).

3.1 Gaps in the literature

A literature review is critical for evaluating the status of research and finding any gaps or areas that require further research. A detailed literature review would be acceptable for a new topic that has greatly developed within the last five years (Rauch et al., 2009). Meanwhile, many significant events could have occurred between 1954 and 2023, including global internet interconnectedness, the Intel microprocessor, the domain name system (DNS), the launch of the World Wide Web (WWW), search engines, smartphones, cloud computing, artificial intelligence (AI), COVID-19, quantum computing, and so on. Nonetheless, scholars are authoring descriptive papers to introduce new concepts into the discipline. A systematic literature review at this point could give readers descriptive, predictive, and prescriptive insights from previous and ongoing comprehensive literature studies for future reviews (Gröger, 2022). However, the scarcity of evidence on the antecedents of the various events concerning IS use and the outcome in the market is limited, which highlights the need for further research in this area. By integrating MO, EO, and IS applications, this paper aims to provide a comprehensive analysis of how these factors impact market outcomes. The discussion and conclusion section will delve into the implications of these theories, the limitations of the current research, and potential avenues for future studies to bridge the gap in the literature. It is imperative to address this scarcity of evidence to advance our understanding of IS use and its impact on the market (Paul et al., 2023).

However, researchers understand that in rapidly evolving sectors where new IS are constantly emerging, a comprehensive literature review may not always be necessary due to the antecedents of events, the decisions of entrepreneurs, and the impact of the outcome on the market (Paul et al., 2023). For example, in the field of artificial intelligence, the environment might change dramatically in a matter of months, putting a five-year literature review out of date and potentially misleading. Instead, researchers in a rapidly changing technological environment may benefit from performing frequent, concentrated literature reviews to stay current on the newest advances and trends. Researchers can ensure that their work is based on the most recent research and theories in the field by remaining current with the literature and using real-time data acquired via IS (Shaikh et al., 2023). This iterative technique could enable a more dynamic and responsive research process, adjusting to the ever-changing landscape of knowledge production in disciplines "of social science and technology" such as artificial intelligence, market dynamics, and the dynamism of entrepreneurial orientations. This iterative strategy enables researchers to stay current and arrive at informed conclusions using the most recent information available because information moves at the speed of light and with rapid changes in technology (Paul et al., 2023).

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Furthermore, understanding the elements that affect IS setup and use, decision can help entrepreneurs improve technology adoption research and understand how businesses might create and use IS (Bork & De Carlo, 2023). Findings should illuminate IS adoption behaviours and strategies in fast-changing organisations. Consequently, the evolving IS age offers opportunities for businesses with the right experience and desire to use IS as a resource (Cuthbertson & Furseth, 2022). Although numerous studies and evaluations have confirmed the ongoing validity and use of the Technology Acceptance Model (TAM) and the (UTAUT) for understanding technology behaviour, it is now necessary to conduct further research on the most effective and efficient utilisation of technology (Alyoussef, 2022). Thus, there has been limited research conducted through the ADO framework in this regard (Koi-Akrofi et al., 2023).

Table 1. Matrix: Past Summary of MO, EO, IS Use

Variables	Source (Author,Year)	Context	Main Findings	Comparison
MO	Jaworski & Kohli, (1993)	The paper explores the reasons for varying levels of MO among organisations and the effects of MO on employees and business performance.	Insights into factors influencing MO impacts on employees and business performance, and potential recommendations for enhancing MO.	The comparison is between organisations with different levels of MO and their impact on employees and business performance.
	Cadogan & Diamantopoulos, (1995)	The paper integrates two conceptualisations of the MO construct and introduces an international dimension to create a more comprehensive framework for organisations operating at an international level.	Two conceptualizations of the MO construct propose a framework integrating them with an international dimension and aim to create a valid and practical expanded MO construct for international organisations.	Introduces an international dimension to its study, aiming to create a valid and practical tool for organizations operating at an international level.
	Randhawa et al., (2021)	The study provides insights into how different types of business models (market-driving, market-driven, ambidextrous) can be developed through the deployment of dynamic capabilities in alignment with the SME's MO.	Investigates the relationship between SMEs' MO, dynamic capabilities, and business model innovation, providing insights on how SMEs can align dynamic capabilities with MO to drive business model innovation.	unclear relationship between MO and dynamic capability deployment in SMEs, as well as the need for more research on business model innovation specifically in the context of SMEs.
	Clark et al. (2024)	The study of EO at the individual level is a burgeoning research agenda in multiple contexts and with diverse implications.	The importance of EO in research, examines studying it at the individual level, and proposes credible ways to do so.	The paper examines the case for studying EO at the individual level, proposing paths for credible research and discussing its contributions to the entrepreneurship discipline.
EO	Wales et al. (2021)	The paper provides a comprehensive overview of EO research through a bibliometric analysis, categorizing influential landmark studies into four primary areas and discussing their impact on the theoretical scaffolding of EO research.	The paper provides a comprehensive overview of key conversational landmarks in EO research, highlighting the significance of Schumpeter's theory and the resource-based view in explaining EO's contribution to firm performance.	Specification of the theoretical mechanisms of EO and its influence on firm performance, as well as the potential to explore other dependent variables like employee satisfaction.

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Variables	Source (Author,Year)	Context	Main Findings	Comparison
	Sarya et al. (2023)	The paper investigates the impact of information technology adoption, EO, dynamic capabilities, and company. highlighting the mediating role of dynamic capabilities between information technology adoption and company performance.	Highlights the relationships between information technology adoption, EO, dynamic capabilities, and company performance in the hotel industry.	The effects of EO, dynamic capabilities, and information technology adoption on company performance. Also, the impact of EO and the use of the internet in business processes on organisational performance.
	Kitsios & Kamariotou (2023)	The paper investigates the impact of IS strategic planning on IT executives' satisfaction and its implications for SMEs' innovation and competitive advantage.	The main findings include investigating the impact of IS strategic planning on IT executives' satisfaction, providing insights into the use of IS strategic planning by executives, and utilizing the MUSA method to identify strong and weak dimensions of IT managers' satisfaction.	The importance of IS strategy integration with business strategy, popular research methods, business-IT alignment, potential distinctions in satisfaction based on different factors, and the impact of top managers' perception of IT importance on IS planning.
IS use	Abadía & Avila, (2023)	The paper discusses the importance of Enterprise Information Systems (EIS) and the adoption of intelligent EIS for decision-making processes, highlighting the benefits and methodology used for conducting a literature review.	The study aims to identify factors for the adoption of intelligent EIS through a literature review and a focus group activity with experts. The focus group was conducted virtually and recorded for confidentiality.	The analysis shows both similarities and differences between the adoption of data analytics tools from the literature review and the focus group.
	Jassim & Mahmoud (2022)	The paper explores the impact of strategic IS on the global marketing channel emphasizing the importance of expanding into global markets for revenue generation and national industry advancement, while also noting a lack of information among managers about key variables.	The main findings emphasize the weaknesses in applying strategic IS within the company, the company's strategic IS systems not meeting the required level compared to competitors, and the limited implementation of advanced systems like genetic algorithms and neural networks.	The verification of the first main hypothesis shows a strong relationship between strategic IS and the global marketing channel, indicating the importance of these systems for the company's marketing strategies.

4. Theory structure

As hinted in the previous section. The antecedent decision and outcome (ADO) framework is a strategic approach that focuses on antecedents, decisions, and outcomes in business (Paul et al., 2023). Proactive organisations need to understand how these factors shape their attitudes and strategic decision-making (Priporas et al., 2023). Antecedents are key factors that shape organizational attitudes and strategic decision-making in marketing (MO) and entrepreneurship (EO) (Lee et al., 2022). MO involves understanding client demands, market research through data capturing, and a proactive strategy to stay

ahead of the competition, while EO involves taking risks, innovating, and exploiting market dynamics (Cao & Weerawardena, 2023; Rahman et al., 2023; Hamzah et al., 2023a).

Decisions reflect the ADO framework based on antecedent drive, with MO prioritising client relationships, developing customer-focused products, and adapting strategy to market changes. EO decisions promote innovation, strategic risk-taking, and proactive market response. Both approaches affect how businesses handle market responsiveness and entrepreneurship (Koi-Akrofi, 2023; Paul et al., 2023).

The ADO framework helps entrepreneurs make informed decisions based on a full understanding of key issues, values, proactive market insights, entrepreneurship, and IS management (Paul et al., 2023). This framework shows companies how to match their strategy with consumer needs, foster innovation, and use information technology for long-term growth in dynamic and competitive business contexts (Kumar & Bhatia, 2021). Additionally, the ADO framework aids understanding, strategic decision-making, contextual relevance, proactiveness, cross-domain application, and strategic alignment (Al-Jaafreh et al., 2023). It provides a structured approach to understanding organizational behaviour and decision-making in numerous settings, allowing scholars to draw insights from past studies (Crick & Crick, 2022). Nonetheless, its proactive and comprehensive nature makes it a strategic resource for studying, assessing, and improving organisational dynamics (Schiling, 2020).

Business and marketing have practically used ADO to study consumer market adoption of new products and services (Rajpal, 2022). A study found that perceived complexity, relative advantage, and compatibility with existing habits affect customer adoption rates, improving customer behaviour knowledge and new technology marketing tactics (Sun et al., 2023). Another study also stressed the need to target specific customer groups and meet their needs, which would result in an organisational niche (Horani et al., 2023).

Scholars from other fields express their perspectives through the theories of TAM and UTAUT. These theories primarily address the acceptance and application of technology across diverse scenarios. Scholars can gain a better understanding of the factors influencing technology acceptance and use in various situations by incorporating these theories into their studies (Alyoussef, 2022). This enables a more comprehensive investigation of the impact of technology on society and the economy, resulting in more nuanced and important insights for scholars to pursue further research.

Overall, the use of iterative procedures and theoretical frameworks improves the quality and relevance of research in the fast-changing disciplines of social science and human technology interaction (Marrucci et al., 2023). However, in this study, we go beyond established frameworks to investigate the historical and cognitive factors influencing people's perceptions of technology. Researchers hope to gather new insights and ideas that will help peers better understand the complex relationship between society and technology. Researchers also want to use the ADO framework to push the boundaries of current knowledge and contribute to the development of creative solutions to problems caused by technological developments. (Paul et al., 2023).

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The ADO framework helps with research question formulation. This study addresses these research questions on decisions and outcomes:

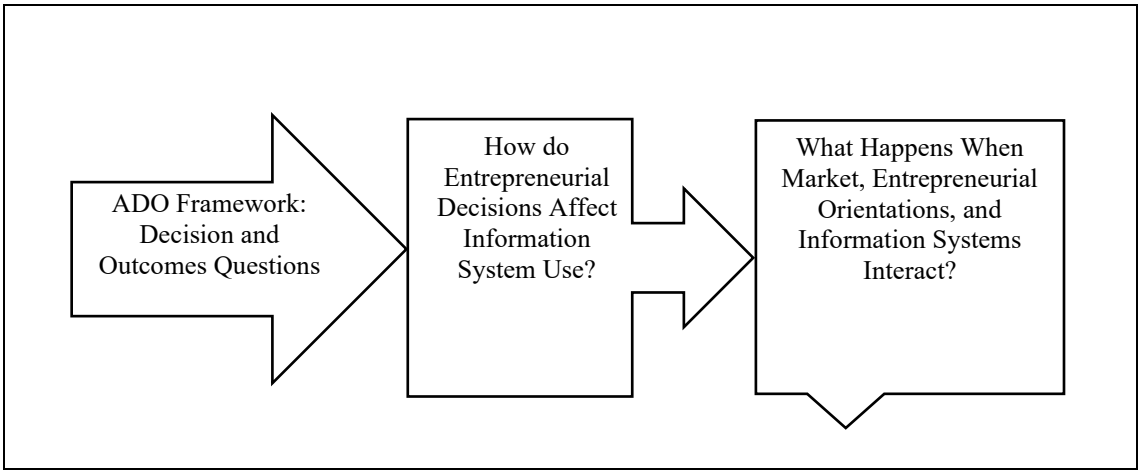

Fig. 2. Research questions concerning ADO framework. (Source: Authors)

The answers to these research questions will contribute to the existing knowledge of the relationship between MO, EO, and IS use.

5. Methodology

We use database searches, registers, citation monitoring, and expert suggestions to review literature and identify key articles on a topic. In scholarly literature, we used the following keywords: 'market orientation', 'entrepreneur orientation', 'information system use', and 'ADO framework' through relational search engine databases. Scholarly publications are prized for their advancement of field knowledge and peer review, while other academic sources are less regarded due to their lack of peer review and ongoing work (Naatu & Alon, 2019). Theses and dissertations, especially at bachelor's and master's levels, are not included as they often demonstrate research skills rather than innovative discoveries. In order to be incorporated into a review, we utilise an academic database and a registered source that adheres to the PRISMA and SPAR-4-SLR guidelines. A total of 123 articles is derived from the body of literature. Items not related to academia are omitted (Paul et al., 2023). The PRISMA flow diagram is shown in Figure 3.

We used academic databases with multiple source quality lists. Web of Science (WoS), Scopus and Google Scholar are used due to their well-known and widely used quality rankings. Scopus contains more subject areas and categories than WoS, helping scholars choose relevant papers (Cheong et al., 2023, Yan & Zhiping, 2023). Many of the mainstream journal titles indexed by WoS and Scopus manage manuscript reviews with stringent thresholds, ensuring only high-quality articles are published (Triono et al., 2023).

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Table 2. Article publication trends 1987–2024.

Year	Number of Articles	Year	Number of Articles
1987	1	2013	1
1992	1	2015	1
1993	1	2017	1
1995	1	2018	2
1996	1	2019	6
1998	1	2020	4
1999	1	2021	17
2003	2	2022	22
2006	2	2023	49
2009	2	2024	5
2012	3		

6. Key findings and results

MO, EO, and IS use are essential in business and marketing. From the extensive literature reviews through answering these questions: how do entrepreneurial decisions affect information system use? What is the outcome of a link between information systems, entrepreneurial tendencies, and the market? we found a strong correlation between the implementation of the ADO framework and increased success in solving complex technological challenges (Sarya et al., 2023). Furthermore, MO, EO, and IS utilisation emerge as fundamental components of business and marketing strategies. Market research and customer feedback play pivotal roles in directing an organisation's efforts towards meeting consumer needs (Hamzah et al., 2020b). Additionally, organisations that embrace entrepreneurial tendencies exhibit creativity, proactiveness, and risk-taking traits (Jaworski & Kohli, 1993; Mahmoud & Hinson, 2012). Leveraging IS enables businesses to harness technology and data for enhanced operational efficiency and informed decision-making (Olofinyehun et al., 2022).

The emphasis on market research and consumer-centric product development demonstrates how a strategic focus on clients permeates all aspects of organisational operations. Interestingly, the alignment between MO and IT business strategies emerges as critical for strategic success in today's dynamic market landscape (Schiling, 2020). Consequentially, market-savvy companies prioritise market research, product development aligned with consumer needs, effective communication, and swift market responses, fostering a customer-centric culture conducive to informed decision-making (Chakrabarty & Rogé, 2003).

Nevertheless, EO embodies the entrepreneurial mindset and activities essential for thriving in evolving environments, characterised by innovation, proactiveness, and risk-taking. Also, entrepreneurial agility proves instrumental in helping organisations navigate challenges and capitalise on emerging opportunities. The conceptual evolution of EO, traced back to seminal works by Miller and Friesen, underscores its impact on IS utilisation and organisational competitiveness (Hunt, 2021; Sun et al., 2023). Therefore, the integration of EO within an organisation enables it to adapt quickly to changes in the market and industry landscape. By embracing innovation, proactiveness, and risk-taking, companies can stay ahead of the competition and seize new opportunities as they arise (Clark et al., 2024). This strategic approach not only enhances internal processes but also improves customer satisfaction, ultimately leading to long-term success and profitability. In today's fast-paced business environment, EO is more important than ever in driving sustained growth and innovation (Morgan & Anokhin, 2023).

Therefore, we discovered that organisations increasingly rely on IS, data analytics, and business intelligence tools to manage, analyse, and derive strategic insights from vast datasets. Thus, effective IS implementation and utilisation entail comprehensive employee training and strategic resource allocation, highlighting the need for further research into optimising these processes (Asad et al., 2023). Owing to that, the integration of IS data into decision-making processes empowers entrepreneurs to identify and

address underlying issues, garnering stakeholder support for recommended interventions (Iglesias-Sánchez et al., 2022).

Using the ADO framework, research may focus on improving ways to find and deal with organizational constraints, using IS data to support suggested interventions, and checking how well entrepreneurial strategy and IS implementation match up. For instance, a business might give its employees thorough training on how to use a new software system before strategically allocating resources to implement the system successfully (Ismail et al., 2021). By integrating data from the IS into decision-making processes, entrepreneurs can track performance metrics, identify bottlenecks, and make data-driven decisions to optimise business operations (Aremu et al., 2021).

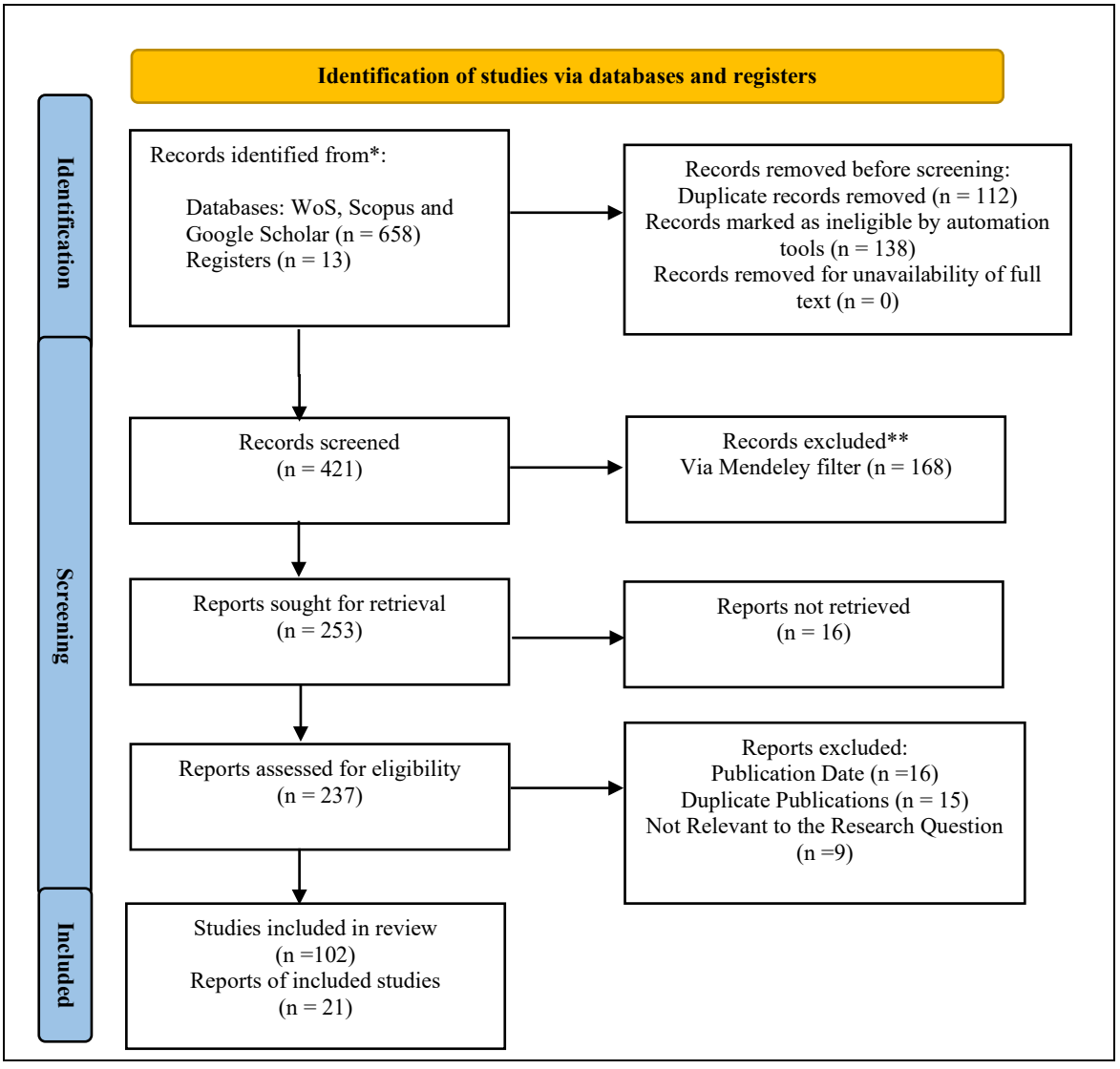

Fig. 3. PRISMA flow diagram

7. Discussion and conclusion

Enterprise appraisal plays a pivotal role in the deployment of IS, as it involves monitoring information resource management and assessing individuals' capabilities to achieve organisational objectives (Rodrigues et al., 2022). Understanding the factors influencing IS utilisation and company performance can stimulate technology expansion in organisations, offering theoretical insights for entrepreneurs to make informed decisions promoting innovation, productivity, and success in competitive environments (Al-Momani et al., 2023).

The ADO paradigm offers a systematic framework that integrates literature on markets, entrepreneurship and IS, illuminating the historical evolution and interaction of these domains. Examining choices and results made before the use of IS demonstrates how the use of IS affects entrepreneurs' responses to market changes. This shows how important technological innovation is in shaping entrepreneurs' views and their use of IS (Balta et al., 2023). While the ADO paradigm may provide valuable insights into the historical evolution of markets, entrepreneurship, and IS, it may not necessarily guarantee success in competitive environments as other factors such as market demand and external competition also play a significant role in shaping outcomes (Vishwakarma et al., 2024). Additionally, reliance on past decisions and outcomes may not always accurately predict future success or innovation in rapidly changing market conditions (Chandra & Rahman, 2024; Nelaeva & Nilssen, 2022).

Entrepreneurs must align their IS with market realities to gain a competitive advantage, prioritising user-friendly interfaces for data entry and decision-making. The evolving landscape of entrepreneurial ventures necessitates continuous technological adaptation, with industry-specific strategies guiding entrepreneurs in navigating markets and boosting company performance (Luuk et al., 2023). By staying agile and responsive to market trends, entrepreneurs can leverage their IS to stay ahead of the competition and meet changing consumer needs. Collaboration with industry experts and leveraging emerging technologies can also provide valuable insights and opportunities for growth (Aziz et al., 2019). By continually updating and refining their IS strategy, entrepreneurs can position themselves for long-term success in the dynamic and competitive business environment (El Said, 2015).

From the brief history we shared, globalisation influences market dynamics and entrepreneurial strategies, underscoring the importance of policymakers' support in encouraging risk-taking, promoting innovative IS utilisation, and facilitating entrepreneurs' access to foreign markets (Aslan & Kumar, 2021). Industry-specific policies and incentives are crucial for integrating information technology into business plans across sectors. While policymakers' support is important, entrepreneurs should also focus on adapting and evolving their IS strategies based on market trends and competition to ensure long-term success (Lailah & Soehari, 2020). Relying solely on external support may not be sufficient to navigate the rapidly changing business environment. For example, in the technology industry, policymakers can provide tax incentives for companies that invest in the research and development of new technologies. This support can encourage risk-taking and foster innovation within the sector, ultimately leading to improved competitiveness in foreign markets (Kraemer et al., 2006). However, technology entrepreneurs must also constantly monitor market trends and competitors to ensure their IS strategies remain relevant and effective, regardless of external support (Mitra, 2019).

The extensive literature on MO, EO, and IS use has significantly influenced theory in business and entrepreneurship. Scholars can support entrepreneurs by providing them with frameworks and tools to effectively implement and manage their IS (Chabaud & Sattin, 2019). By staying informed on the latest research and trends in the field, entrepreneurs can make more informed decisions and stay ahead of the competition. Additionally, collaboration between scholars and entrepreneurs can lead to the development of cutting-edge technologies and solutions that further drive innovation and success in the industry (Varadarajan, 2023). Ultimately, the partnership between academia and industry plays a crucial role in the

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advancement of IS and the overall growth of the technology sector (Lumpkin & Dess, 1996; Lumpkin & Pidduck, 2021).

7.1 Implications to theory

Theoretical implications emphasise the importance of integrating organizational appraisal frameworks into theoretical models exploring IS adoption and utilization dynamics. This integration allows for a more comprehensive understanding of how businesses can effectively implement and utilize IS to enhance their operations (Cho & Lee, 2018). By bridging the gap between academia and industry, researchers can develop theoretical insights that can directly benefit businesses seeking to leverage technology for growth. Overall, the collaboration between scholars and entrepreneurs in the field of IS is essential for driving progress and innovation in the tech sector (Dewi et al., 2017).

This collaboration not only facilitates the exchange of knowledge and best practices but also fosters a culture of continuous learning and improvement. Through joint research projects and partnerships, academics can gain valuable real-world insights, while businesses can benefit from cutting-edge research findings (Jassim & Mahmoud, 2022). Ultimately, this symbiotic relationship leads to the development of more efficient and effective IS that drive competitive advantage and business success. In an ever-evolving digital landscape, this partnership between academia and industry is crucial for staying ahead of the curve and adapting to the rapid pace of technological change (Sieg et al., 2023). Theoretical frameworks should reflect the dynamic nature of entrepreneurial ventures and emphasise the importance of agility and responsiveness to market trends in IS utilisation (Clarysse et al., 2023).

The extensive literature on MO, EO, and IS utilisation has profoundly influenced theoretical frameworks in business and entrepreneurship. Scholars play a pivotal role in supporting entrepreneurs through the development of frameworks and tools for effective IS implementation and management (Soetanto et al., 2022). Collaboration between academia and industry fosters innovation and drives technological advancements, ultimately contributing to the growth and competitiveness of the technology sector (Sieg et al., 2023). Theoretical models should emphasise the importance of interdisciplinary collaboration and the practical application of scholarly insights in real-world entrepreneurial contexts (Yan & Zhiping, 2023).

7.2 Limitations of the research

We identified four main limitations to this research: methodological constraints, bias and subjectivity, and external factors such as market conditions and regulatory changes. Overcoming these limitations will require a more robust and comprehensive approach to data collection and analysis, as well as a recognition of the complex and dynamic nature of the technology sector (Lu & Dimov, 2023). By addressing these challenges, researchers can develop more accurate and actionable recommendations for IS implementation and management, ultimately leading to more successful and sustainable technology-driven ventures (Machado et al., 2023). While methodological constraints and bias may present challenges, it is important to note that external factors such as market conditions and regulatory changes are often beyond our control. Additionally, addressing these limitations may not guarantee more accurate or actionable recommendations, as the technology sector is inherently unpredictable and constantly evolving (Sarya et al., 2023).

7.3 Future research recommendations

Future systematic literature review research on MO, EO, and IS use should employ alternative synthesis to find overarching themes and improve understanding (García & Aguilar, 2022; Paul et al., 2023). The study should include in-depth technology history to contextualise IS and entrepreneurial changes (Al-Amin et al., 2023). Analysing the relationship between IS use and entrepreneurial activities

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is crucial in examining how technical advances affect market dynamics and entrepreneurship (Kitsios & Kamariotou, 2023). This may involve incorporating a mix of quantitative and qualitative research methods, utilising multiple sources of data, and engaging with a diverse range of stakeholders to gain a holistic understanding of the issues at hand. In addition to that, further research could focus on analysing how the use of IS data aligns with the company's overall strategy and identifying any discrepancies that may hinder organisational success. Additionally, researchers may need to continuously adapt their methodologies and frameworks to account for the ever-evolving landscape of technology and business. By staying agile and responsive to change, researchers can ensure that their findings remain relevant and valuable in guiding decision-making within the technology sector (Navarro-García et al., 2024; Randhawa et al., 2021).

Due to globalization, future researchers should include worldwide research and literature to better understand how MO, EO, and IS usage vary by region and culture, as globalization affects entrepreneurial tactics and IS implementation. These methodological improvements complement the systematic literature analysis to provide a more nuanced and thorough assessment of MO, EO, and IS utilisation (Aslan & Kumar, 2021; Qalati et al., 2022).

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Conflict of interest statement

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

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