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Articles

The use of sales technology by salespeople as an information source and stimulant for intrapreneurship

O uso da tecnoloxía de vendas por parte dos vendedores como fonte de información e estimulante do intraemprendemento

Pedro Mendonça Silva[1,a], Ana Pinto Lima[1,b], Sandrina Francisca Teixeira[1,c]
[1] Instituto Politécnico do Porto – ISCAP, Portugal The Centre for Organisational and Social Studies of the Polytechnic of Porto (CEOS.PP), Portugal

[a]psilva@iscap.ipp.pt
[b]analima@iscap.ipp.pt
[c]sandrina@iscap.ipp.pt

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Abstract

Digitization has changed the role of salespeople and, consequently, the dynamics of their operations at the interface between the supplier and the customer. Currently, a salesperson is often called upon to solve customer queries, which implies taking on the role of intrapreneur to internally create a solution. This study contributes to the literature by filling a gap regarding intrapreneurial salespeople and their uses of sales technology. This research focuses on the intrapreneurship of salespeople and explicitly investigates its antecedents. The structural equation modelling technique has been chosen as it is considered to be the most appropriate one for the analysis. Research data from 565 Portuguese salespeople reveals that their use of sales technology influences their intrapreneurship behaviour thanks to information systems. Last of all, this study adds invaluable knowledge to the literature, gives valuable insight to sales managers and proposes future lines of research.

Keywords: Salespeople; Digital sales technology; Information systems; Intrapreneurship.

Resumo

A dixitalización cambiou o papel dos vendedores e, en consecuencia, a dinámica das súas operacións na interface entre o provedor e o cliente. Na actualidade, un vendedor é chamado a miúdo para resolver as consultas dos clientes, o que implica asumir o papel de intraemprendedor para crear internamente unha solución. Este estudo contribúe á literatura enchendo un baleiro en relación cos vendedores intraemprendedores e os seus usos da tecnoloxía de vendas. Esta investigación céntrase no intraemprendemento dos vendedores e investiga explicitamente os seus antecedentes. Elixiuse a técnica de modelización de ecuacións estruturais por considerala a máis adecuada para a análise. Os datos da investigación realizada con 565 vendedores portugueses revelan que o uso da tecnoloxía de vendas inflúe no seu comportamento intraemprendedor grazas aos sistemas de información. Por último, este estudo engade un coñecemento inestimable á literatura, ofrece unha visión valiosa aos directores de vendas e propón futuras liñas de investigación.

Palabras chave: Vendedores; Tecnoloxía de venda dixital; Sistemas de información; Intraemprendemento.

JEL: M10; M14; M15; M30.

1. INTRODUCTION

Digital transformation is fundamentally changing companies and purchasing processes, giving customers the option to easily switch between online and offline environments (Shi et al., 2020). To keep up with this development, if companies want to be successful, they must make full use of digital tools in sales processes (Mahlamäki et al., 2020), which intrinsically implies the sales department's involvement (Mero et al., 2020). Therefore, to facilitate the adoption of digital tools, companies should listen to salespeople and gather feedback from them, allow them to play a part in the decision-making process and redesign new activities for them (Guenzi & Nijssen, 2021). Technology use can be significantly improved by taking on board the vast knowledge that salespeople have (Liu & Comer,2007). Technology is highly effective for Customer Relationship Management (CRM), this and customer knowledge management being positively related to each other (Soltani et al., 2018). As for the mobile phone, an analysis of a salesperson's telecommunication connections can help measure social capital, which includes networks, people and the relationships developed through the network (Feng et al., 2020). As a consequence, the use of technology can mean the construction of knowledge for a salesperson and a company, both for markets and customers (Giovannetti et al., 2021).

Indeed, it can be said that salespeople with a good understanding of customers are more relevant to the success of a company than those with technical knowledge (Böhm et al., 2020). To illustrate, during a creative exchange of ideas with a customer, a salesperson may identify previously unknown needs and/or a solution which had not been previously thought of; intrapreneurial salespeople bring new and challenging insights to companies and thus create better solutions to problems than their competitors can (Amyx et al., 2016). This individual is capable of re-assigning staff and resources in the sales company a to cater for the customer (Sengupta et al., 2000). Thus, generating deep insights into shoppers helps salespeople to identify customers' business strategies (Bongers et al., 2021). As can be seen, the role of salespeople is incredibly decisive in the preliminary stages of selling solutions (Böhm et al., 2020) because they act as the middlemen between the supplier and the customer (Panagopoulos et al., 2017). Hence, they become intrapreneurs because they seek internal solutions to meet customer needs. Although technological advances tend to automate sales operations (Mahlamäki et al., 2020), in many situations the seller is called upon to provide the solution to the problems (Böhm et al., 2020). For this reason, the salesperson is currently an investigator and advisor to customers, inherently with social and ethical responsibilities (Castro-González & Bande, 2019).

However, studies on intrapreneurial salespeople are very scarce (Amyx et al., 2016; Sengupta et al., 2000). Sengupta et al. (2000) considered intrapreneurship as one of the individual-level abilities of salespeople, and they reveal that individual abilities affect relationship processes (communication quality, customer trust) and, consequently, relationship outcomes (perceived effectiveness). Amyx et al. (2016) studied salespeople's intrapreneurial behaviour as a precursor to the quality of a customer-salespeople relationship represented by a commitment to, trust in, and satisfaction with salespeople. Nevertheless, there is still a need for studies on intrapreneurial practices (Azis & Amir, 2020), in the fields of predictors, or antecedents, of intrapreneurship, among others (Gawke et al., 2019). As a result, this study aims to expand the literature regarding salespeople by addressing this specific research gap, considering the use of sales technology by salespeople as sources of information and consequently having an impact on intrapreneurial practices.

This work begins with a review of the relevant literature on the uses of sales technology by salespeople, information systems and intrapreneurial practices. Then, the quantitative methodology used to examine the relationship among these constructs is presented. After this, the paper offers a discussion of the findings and implications. Lastly, it indicates some limitations and directions for further research.

2. THEORETICAL BACKGROUND, HYPOTHESES AND RESEARCH MODEL

2.1. The direct influence of the use of technology and information systems by salespeople

Technology may provide upgrades in various areas of business and management (Huarng et al., 2021), transforming sales operations forever, even being considered an essential aspect of a salesperson's skills (Høgevold et al., 2021). Customers are using technology more and more, so sales departments need to keep on top of it (Sharma et al., 2020). Sales managers must deploy technology that enhances the interaction between the company and its customers (Sharma et al., 2020), by adopting sales technology such as CRM software (Kumar et al., 2020) and mobile CRM (Rodriguez & Boyer, 2020) and/or social media (Chaker et al., 2022). These tools are important for business operations since sales activities and presentations can be planned, as well as the recording of relevant customer or market information (Høgevold et al., 2021).

Indeed, digital capabilities can deal with a large amount of information from the internal and external environment (Gobble, 2018), involving multiple functional areas, particularly information systems (Verhoef et al., 2021). WhatsApp, one of the most popular instant messaging apps today, is considered an informative platform that can help to strengthen the internal CRM system of companies (Agrawal, 2021), providing content for an internal information system. Considering the technological perspective, information systems are an integrated set of tools that aim to collect, store and process data and provide information and knowledge for the decision-making process (Boell & Cecez-Kecmanovic, 2015). Such systems are important because companies need to apply these techniques for data processing so that the data-mined content is understandable to users (Silva et al., 2021). Because of this, the following research hypothesis has been proposed:

H1. The use of sales technology by salespeople has a positive and significant impact on a company's information system.

2.2. The direct influence of information systems on intrapreneurship

If information technology is managed well, it can have a positive effect on a company's development of intrapreneurial culture (Benitez-Amado et al., 2010); tangible, information system-based tools and processes can help leverage ideas into intrapreneurial projects and/or products (Lan-Ying et al., 2021). It is crucial for employees to have access to information systems so that they feel suitably informed about the processes conducted by the company (Saura et al., 2020). Hsieh and Wu (2019) have characterized digital information platforms as boosters of intrapreneurship, providing intrapreneurs with opportunities to create new start-up business units or companies.

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Intrapreneurship is a process in which an employee or a group of employees within a company identifies, seeks, and encourages innovative opportunities and creates new structures, revitalising the company or introducing innovative products and processes (Vargas-Halabí et al., 2017). Intrapreneurship is when an employee acts like an entrepreneur in a company (Parker, 2011). Gawke et al. (2019) have argued that the conceptualization of intrapreneurship encompasses two concepts: venture behaviour and strategic renewal behaviour. According to the authors (Gawke et al., 2019), employee venture behaviour is related to entrepreneurial activities by employees aimed at creating, adding or investing in resources in new businesses. Employee strategic renewal behaviour includes activities to capture opportunities and advantages aimed at radically or incrementally renewing the company's current products, services or processes. Therefore, intrapreneurial salespeople are avowedly creative, initiative-taking and action-oriented people, but, to be like that, they need to be constantly aware of what is happening in the company. Companies must implement practices that promote the flow and sharing of information and internal communication. Because of this, the following research hypotheses have been proposed:

H2. A company's information system positively and significantly affects salespeople's strategic renewal behaviour.

H3. A company's information system positively and significantly affects salespeople's venture behaviour.

2.3. The mediating role of the information system

Technology can help salespeople work more efficiently when they have relevant customer or market information (Høgevold et al., 2021); digitization (the process of converting information into digital format) can facilitate internal and external company interactions and capture critical market and customer information (Sharma et al., 2020). Thus, top management must implement strategies and information services so that its employees (including salespeople) are informed about the processes related to the company (Saura et al., 2020). A digital platform may contain data and information that can help to generate and screen ideas as well as develop and test concepts. In other words, this type of platform nourishes intrapreneurship (Hsieh & Wu 2019), represented by two sub-dimensions (strategic renewal and venture behaviour), which can be considered two indicators of employee intrapreneurship (Gawke et al., 2019). Technology can help in the development, monitoring and implementation of information, leading to intrapreneurial results (Lan-Ying et al., 2021).

In short, this study argues that the effects of the use of sales technology by salespeople on intrapreneurship are not direct. Consequently, the existence of an information system plays a mediating role between the use of sales technology by salespeople and intrapreneurship, leading to the formulation of the following hypotheses:

H4. A company's information system plays a mediating role between the *use of technology by salespeople and their strategic renewal behaviour*.

H5. A company's information system plays a mediating role between the use of technology by salespeople and their venture behaviour.

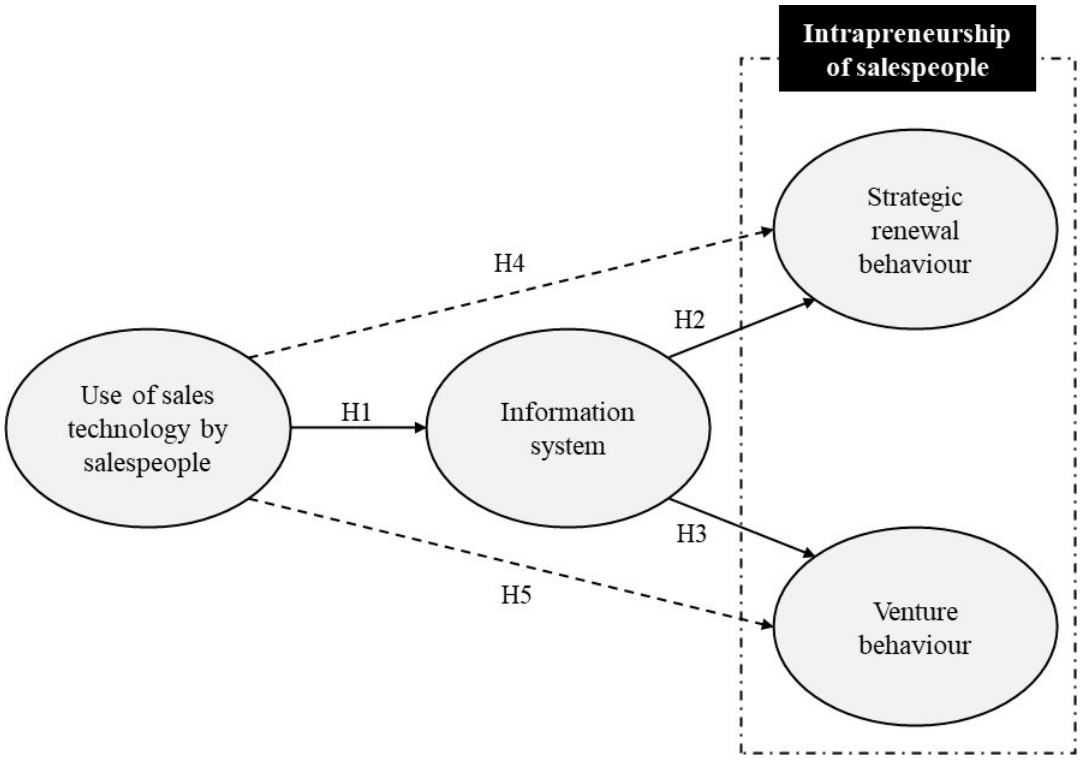
2.4. Moderator role of the business context

This study argues that the business context can be a differentiating factor. Although intrapreneurship has an individual dimension within a bottom-up process, the intrapreneur is not a single actor within the company; he/she acts as part of an organization where there is mutual influence (Neessen et al., 2019). For instance, industries and manufacturers are normally involved in value chains and production systems. For industries that wish to remain competitive, continuous improvements and innovations in production processes have become imperative (Atari & Prause, 2019). On the other hand, in a service company, the focus is tending towards relying less on innovation and more on the intrinsic behaviour of intrapreneurs, by way of proactiveness and risk-taking (Lages et al., 2017). It is true that intrapreneurs are individuals willing to take risks, whether they be financial or reputational, putting their careers at stake if their initiatives fail, meaning that taking risks seems to be conditioned to contextual factors (Huang et al. al., 2021). Therefore, between the industry and the services sector there seems to be a contextual difference to consider.

2.5. The research model

Figure 1 illustrates the developed research model, which suggests that information systems are influenced by the use of sales technology by salespeople. Intrapreneurship (represented by two dimensions: strategic renewal behaviour and venture behaviour) is influenced by the information system. Furthermore, the model reveals that the information system has a mediating role between a salesperson's use of sales technology and the two dimensions of intrapreneurship. The model has been built based on a review of the literature, hypothetically represented, and in conditions to test their hypotheses using current data.

Figure 1. Research model



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3. METHODS

This research model examines how the use of sales technology by salespeople affects information systems and, subsequently, their intrapreneurial behaviour. Therefore, the collection of data, samples and measurements is illustrated in the remainder of this section.

3.1. Data and sample

The target population of this research is Portuguese salespeople employed to sell goods or services. The data collection process has been performed using a survey. This study has randomly collected contacts from a database belonging to a prestigious Portuguese Salespeople's Association. The database comprises up-to-date and comprehensive personal data on 1,245 salespeople who were contacted in May 2022 by email and were requested to answer the questionnaire in electronic format. In the end, 565 valid and complete responses were collected, with a response rate of 45.4%. The sample size is considered robust since it is >300 observations, overcoming the item/response ratio (1/10) as well (Collier, 2020). The t-test has been employed to compare the mean difference between the first 300 and the last 265 respondents (Armstrong & Overton, 1977) to check for non-response bias (Armstrong & Overton, 1977). Empirical results have revealed no significant differences.

Table 1 presents the demographic information for the salespeople and the companies where they worked at the time of the survey.

Table 1. Features of salespeople

Characteristics	Values	Frequency	Percentage
Gender	Male	344	60.9
	Female	216	38.2
	Other	5	0.9
Year of birth	1946-1965	77	13.6
	1966-1980	278	49.2
	1981-1994	168	29.7
	1995-2012	42	7.4
Years of experience	< 3 years	72	12.7
	4 - 10 years	145	25.7
	10 - 20 years	165	29.2
	> 20 years	183	32.4
Education	High school graduate or similar, or left without qualifications	190	33.6
	University education	375	66.4
Type of company	Manufacturer/	248	43.9
	Services/Other	317	56.1
Size*	Micro	185	32.7
	Small	173	30.6
	Medium	132	23.4
	Large	75	13.3

Characteristics	Values	Frequency	Percentage
Export level	0%	188	33.3
	>0-<25%	172	30.4
	25%-50%	69	12.2
	>50%	136	24.1

* Features of small and medium-sized enterprises (SMEs) according to the European Commission (2022).

3.2. Research tools and measurements

The survey has been divided into three parts, the first consisting of demographic information for the salespeople (i.e. gender, age, years of experience and education), the second comprising information about the company where they worked at the time of the survey (i.e. the type of company, size and export level) and the third measuring the research model constructs. Regarding the use of sales technology by salespeople, four items have been used, based on Høgevold et al. (2021). Concerning the information system, four items have been employed from Silva et al. (2021). The constructs that characterize intrapreneurship (strategic renewal behaviour and venture behaviour) have been measured with four items each, adapted from Gawke et al. (2019).

All the scales used in the study have already been validated in previous studies and all items have been measured employing a five-point Likert scale ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree". The items are shown in Table A1 (appendix).

3.3. Data analysis

The Statistical Package for the Social Sciences (SPSS) Statistics Software (version 26) and its integrated AMOS software (version 22) have been used to perform Structural Equation Modelling (SEM) (Collier, 2020). SEM is a multivariate statistical analysis technique suitable for examining structural models representing hypotheses for causal relations among several variables. SEM includes two phases: the exploratory factor analysis and the confirmatory factor analysis (Collier, 2020).

To analyse the mediating effects of the "information system" construct, the bootstrapping method, a nonparametric resampling procedure, has been applied. Meanwhile, to analyse the moderating effect of the type of company (industrial vs. services), the multigroup analysis has been used (Collier, 2020).

4. RESULTS

4.1. Exploratory factor analysis (EFA)

Although the study uses a construction measurement scale already validated in previous studies (Gawke et al., 2019; Høgevold et al., 2021; Silva et al., 2021), an exploratory factor analysis has been applied to identify the theoretical structure. Table 2 reveals the mean and standard deviations of the responses to the items, as well as the skewness and kurtosis of the data, which measure how concentrated or dispersed it is. The values of skewness between ±2

and the kurtosis between ±7 denote appropriate values (Watkins, 2021). Hence, the results obtained are adequate, revealing a tendentially normal distribution.

Table 2 also shows the findings for the Exploratory factor analysis (EFA) in section 4.1. The Kaiser-Meyer-Olkin (KMO) and Bartlett tests of sphericity have been applied to analyse the suitability of the data. The KMO coefficient is > 0.70, and Bartlett's test is significant at the 0.001 level, indicating the item's appropriateness (Watkins, 2021). Factor loadings with varimax rotation have also been employed. The values obtained are associated with the previously defined theory, linking the items to the corresponding constructs, with factor loadings higher than the recommended value of 0.5. The total explained variance in all constructs exceeds the minimum value of 60% (Watkins, 2021). Finally, Table 2 reveals that the Cronbach's alpha values of all constructs are > 0.7, and the full-scale Cronbach's alpha is > 0.9. Therefore, the EFA meets the requirement for the reliability coefficient of the measurement scales, presenting high internal consistency (Collier, 2020; Watkins, 2021).

4.2. Confirmatory factor analysis (CFA)

The next stage is the confirmatory factor analysis (CFA), which has been performed to investigate the factorial structure of the model. The CFA focuses on the main indicators of convergent validity: composite reliability (CR) and average extracted variance (AVE). The values obtained meet the recommended requirements (CR >0.70; AVE >0.50). Thus, the results indicate that the measurement model has good convergent validity (Collier, 2020), as shown in Table 2.

Table 2. Statistical analysis

Items	Mean	Standard deviation	Skewness	Standard skewness Error	Kurtosis	Standard Kurtosis Error	Factor loadings	KMO	TVE	α	CR	AVE
Use of sales technology by salespeople								0.827	72.96%	0.873	0.877	0.642
USTS1	4.40	0.889	-1.558	0.103	2.110	0.205	0.801					
USTS2	4.14	0.985	-1.061	0.103	0.572	0.205	0.838					
USTS3	4.26	0.875	-1.177	0.103	1.150	0.205	0.838					
USTS4	4.13	1.083	-1,166	0.103	0.582	0.205	0.798					
Information system								0.785	65.77%	0.810	0.748	0.597
IS1	3.70	1.174	-0.713	0.103	-0.256	0.205	0.630					
IS2	4.28	0.911	-1.316	0.103	1.490	0.205	0.677					
IS3	3.69	1.186	-0.670	0.103	-0.357	0.205	0.710					
IS4	4.25	0.864	-1.143	0.103	1.232	0.205	0.710					
Strategic renewal behaviour								0.843	79.51%	0.914	0.914	0.727
SRB1	4.01	0.981	-0.974	0.103	0.635	0.205	0.709					
SRB2	3.94	1.006	-0.784	0.103	0.131	0.205	0.724					
SRB3	4.13	0.945	-1.112	0.103	1.046	0.205	0.799					
SRB4	4.13	0.939	-1.072	0.103	0.923	0.205	0.787					

Items	Mean	Standard deviation	Skewness	Standard skewness Error	Kurtosis	Standard Kurtosis Error	Factor loadings	KMO	TVE	α	CR	AVE
Venture behaviour								0.735	62.70%	0.795	0.708	0.577
VB1	3.88	1.135	-0.911	0.103	0.135	0.205	0.659					
VB2	3.98	1.091	-1.001	0.103	0.405	0.205	0.662					
VB3	2.92	1.289	0.048	0.103	-1.008	0.205	0.809					
VB4	3.49	1.223	-0.473	0.103	-0.686	0.205	0.707					

Note:
Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization.
TVE - Total variation explained (TVE): 67.04%
Kaiser-Meyer-Olkin measure of sampling adequacy (KMO): 0.930
Bartlett's test sig. 0.000.
Cronbach's alpha (α): 0.917

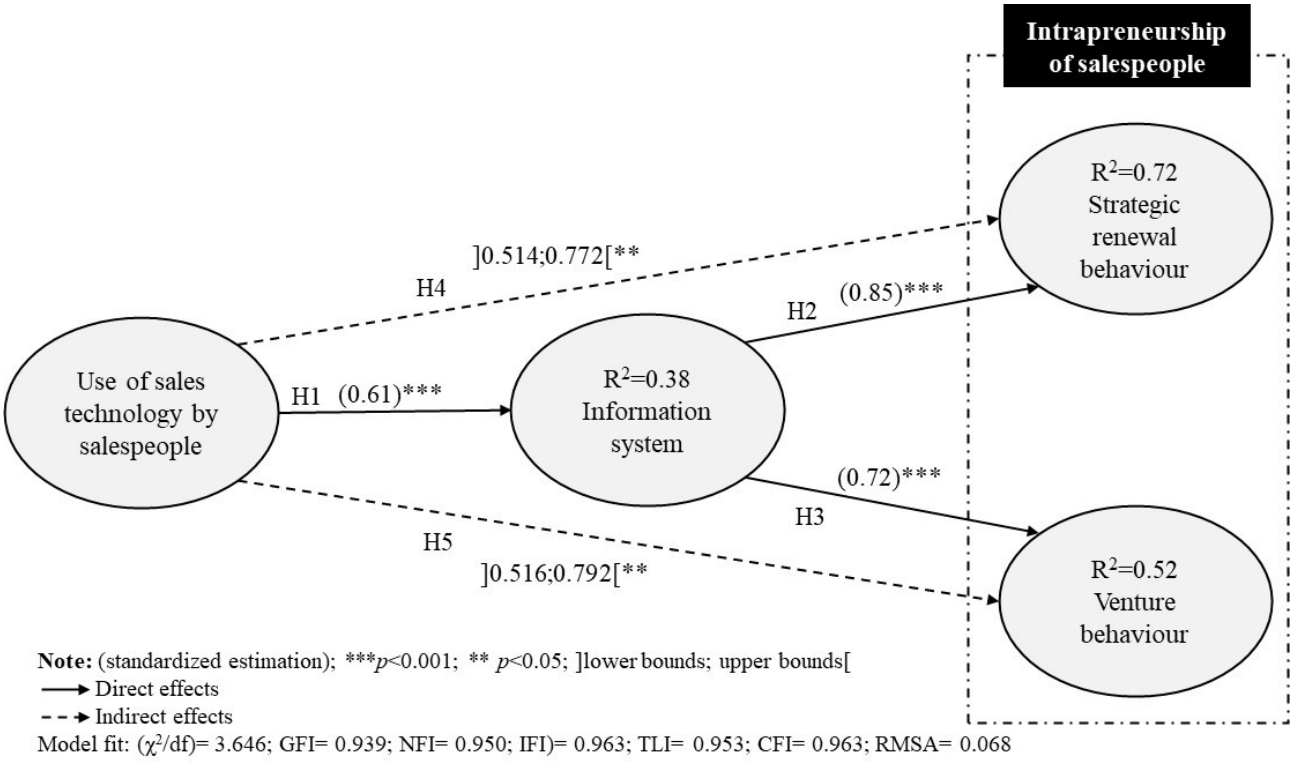
4.3. Structural model

The structural model with four constructs (Use of sales technology by salespeople; Information system; Strategic renewal behaviour; Venture behaviour) and hypothesized relationships has been evaluated. The various fit indices have been used to determine whether the model is acceptable or not. Hence, chi-square normalized by degrees of freedom (χ^2/df) = 3.646 (between 1.0 and 5.0); p< 0.001; goodness-of-fit (GFI) = 0.939 (≥0.90); normed fit index (NFI) = 0.950 (≥0.90); incremental fit index (IFI) = 0.963 (≥0.90); Tucker–Lewis index (TLI) = 0.953 (≥0.90); confirmatory fit index (CFI) = 0.963(≥0.90); root means square approximation (RMSA) = 0.068(<0.08). Thus, the indices obtained are appropriate (Byrne, 2016; Collier, 2020), so the model is well fit to the data.

In the next step, a path analysis has been used to indicate the direct effect (hypothesized relationships) of an independent variable on a dependent one (Byrne, 2016; Collier, 2020). The results reveal that the use of sales technology by salespeople has a positive and significant impact on a company's information system (β= 0.61; p<0.001), so H1 is supported. The results also show that a company's information system has a positive and significant impact on salespeople's strategic renewal behaviour (β= 0.85; p<0.001) and on their venture behaviour (β= 0.72; p<0.001), therefore supporting H2 and H3, respectively.

The values of R^2 correspond to the coefficient of determination; in other words, the R^2 indicates the percentage of variance of the dependent variable explained by the antecedent variable of the model. All R^2s have values >0.25, which is considered significant (Collier, 2020). Figure 2 illustrates the structural model with parameter estimates.

Figure 2. Structural model



4.4. The information system mediating role test

To assess the mediating role of the information system, the significance of the mediation effects by bootstrap resampling has been analysed (Collier, 2020). Estimates for the indirect effects of the use of technology by salespeople on their strategic renewal behaviour and their venture behaviour are framed by a 95% confidence interval (C.I.) with limits of]0.514;0.772[and]0.516;0.792[, respectively. Therefore, H4 and H5 are statistically supported. Figure 2 shows the estimated parameters.

4.5. Examining the moderating role of the business context

This study argues that between industrial and services salespeople, a contextual difference should be considered. Thus, to examine the moderating role of the type of company (industrial vs. service sectors) where salespeople work, the multigroup analysis of the structural model has been employed (Collier, 2020).

This analysis evaluates the invariance of the measurement model and the structural model between the two groups (salespeople from industrial companies and salespeople from service companies). The invariance of the measurement model has been assessed in both groups, first by comparing the unconstrained model, and then by comparing the model with structural coefficients (Byrne, 2016; Collier, 2020). Therefore, assuming the unconstrained model $(\chi^2_{\lambda}(9) = 6.008; p = 0.740)$ and the model measurement weights $(\chi^2_{\beta}(3) = 6.537; p = 0.088)$, the results reveal that the model is invariant.

Regarding the mediating role of information systems between groups, there are no differences either. Therefore, the use of technology by industrial salespeople in terms of their strategic renewal behaviour and venture behaviour is framed by a 95% C.I. with limits of]0.401;0.740[and]0.448;0.856[, respectively. The use of technology by service salespeople in the arena of their strategic renewal behaviour and venture behaviour is framed by a 95% C.I. with limits of]0.533;0.947[and]0.491;0.889[, respectively. Therefore, H4 and H5 are statistically supported in both groups, although for service salespeople, the indirect effects appear to be stronger.

5. DISCUSSION AND THEORETICAL IMPLICATIONS

This study combines the literature on salespeople, sales technology and intrapreneurship, developing a theoretical model to investigate the relationships between the use of sales technology by salespeople, information systems and intrapreneurship, represented by strategic renewal and venture behaviour. The study also investigates the mediating role of information systems and the moderating role of the business context (industrial vs services).

Evidence from 565 salespeople suggests that the use of sales technology by salespeople has positive effects on a company's information system and that its information system positively affects a salesperson's intrapreneurial behaviour, characterized by strategic renewal and venture behaviour. Furthermore, the study finds that an IT system in a business plays a mediating role between the use of technology by salespeople and their strategic renewal and venture behaviour. Next, comparing industrial salespeople with service salespeople, the results show that the groups are not different at the model level. Finally, regarding the moderating role of information systems, the results show that it does not contrast between the two groups (industrial and service salespeople), although it seems that the moderating effect is more robust with service salespeople.

This paper brings three theoretical contributions to the literature. First, the study develops the current research on the antecedents of intrapreneurship (Gawke et al., 2019), most specifically at the salesperson level, a topic which has scarcely been studied (Amyx et al., 2016; Sengupta et al., 2000). Previous literature has only focused on the intrapreneurial behaviour of salespeople for the quality of and strategies employed for customer-salesperson relationships (Amyx et al., 2016; Sengupta et al., 2000). However, a piece of work on the antecedents of intrapreneurship was felt to be opportune for the sales literature. This study has made it possible to identify and clarify a process that promotes intrapreneurial behaviour in salespeople. Thus, this paper demonstrates that the integrated use of technology by salespeople in the form of information systems can cause a permanent transformation of the sales operation (Høgevold et al., 2021). Generally, these systems involve the development, monitoring and implementation of information (Lan-Ying et al., 2021; Silva et al., 2021). Consequently, they have an impact on entrepreneurial practices (Lan-Ying et al., 2021) but more so on the activities of salespeople who seek to increase changes or seize opportunities which may determine a company's long-term competitiveness (strategic renewal) and who possess other intrapreneurial behaviour such as creating, adding and investing resources in new businesses (venture behaviour [Gawke et al., 2019]).

Therefore, this study presents an original model that makes understanding the relationships between the use of sales technology (information input), information systems (information processing and output) and the intrapreneurship behaviour of salespeople (action) clearer.

Regarding the second theoretical implication, this piece of work highlights the mediating role of information systems. Indeed, the stages of grouping, collecting, processing, storing and transmitting information facilitate intrapreneurial intentions, in this case of salespeople, regardless of the business environment. Information systems are important for transforming the input of data (based on sales technology) into accessible knowledge for their users (Silva et al., 2021). The knowledge derived from these systems empowers salespeople towards intrapreneurial behaviour, thus enhancing the role of technology in intrapreneurial results (Lan-Ying et al., 2021). Information is an asset; extracting knowledge from information is proficiency.

The third theoretical implication concerns the analysis of the business environment. This study has not found significant differences in the model between industrial or service salespeople. Although some authors point to the influence of contextual factors (Huang et al., 2021; Neessen et al., 2019), the findings of this paper reveal that intrapreneurial behaviour following on from the capture of information from sales technology and the implementation of information systems seems to be accessible to all salespeople regardless of their business environment.

In short, the validation of the structural model corroborates the idea that sales technology can be considered an essential benefit for salespeople (Mero et al., 2020). Moreover, the findings confirm that it can help in the development, monitoring and implementation of information, leading to intrapreneurial behaviour (Lan-Ying et al., 2021). This dynamic revealed by the structural model adds to contributions from several studies, such as the role of technology for helping salespeople to collect critical market and customer information (Høgevold et al., 2021; Sharma et al., 2020). This also supports Hsieh and Wu (2019), who have highlighted information systems as sources of intrapreneurship. Finally, the results on model invariance based on business type do not clarify the differences between industries and services that previous studies have suggested (Atari & Prause, 2019; Lages et al., 2017).

5.1. Implications for practice

This study offers several significant implications for salespeople. The findings show that the integration of sales technology and information systems is vital for fostering intrapreneurial behaviour in said professionals, which is beneficial to those who want to build upon their entrepreneurial/intrapreneurial knowledge. Thus, sales technology and information systems, like mobile phones and CRM (Agrawal, 2021; Feng et al., 2020), can be used to capture data, manage information and work processes and connect with customers, partners or the market in general (Giovannetti et al., 2021). Hence, for individuals to efficiently develop intrapreneurial skills, they need to obtain facts and knowledge that can facilitate the decision-making process, a situation where information systems can play a fundamental role (Lan-Ying et al., 2021).

Indeed, the current context is increasingly marked by digital behaviour (Shi et al., 2020) and shows an escalating need for salespeople to be connected at all times. This means that sales technology should be seen as an essential benefit for salespeople (Mero et al., 2020); they must understand the importance of omnichannel customer service, integrating face-to-face contact with text messaging via SMS, chatbots, social media, email and instant messaging, among other digital tools, to provide a unified service experience. Also, using big data analytics tools, CRM or other sales analytics software can help manage prospecting and customer relationships, as well as effectively track, evaluate and improve sales performance. Sales technology is a powerful source of data for information systems that support decision-

making and help identify opportunities and changing needs (Hsieh & Wu, 2019). Thus, salespeople must actively engage with technology and information systems because the knowledge they gain from these digital tools is a key resource for their intrapreneurial behaviour; in turn, this can, for instance, encourage changes in an organization, improve products and services and allow innovative ideas and strategies to be created, as well as new business units to be implemented or new markets to be reached (Gawke et al., 2019). Therefore, salespeople can assume a dual role within any company; firstly, as a source of external information (market, customers, competitions, etc.) supported by sales technology; secondly as an active player in intrapreneurial practices. These are generally internal solutions to meet customer needs or competitive advantages, regardless of the business environment, whether industrial or in the service sector.

This study also offers significant implications for companies. A manager should see a salesperson not only as an interface between the supplier and customer but also as a creator of solutions, value propositions and/or competitive advantages (Böhm et al., 2020; Panagopoulos et al., 2017). Consequently, it is also up to managers to create an intrapreneurial culture where salespeople can play a fundamental role.

This study also suggests that managers should invest in sales technology, such as CRM, mobile data, big data, sales optimization software and information systems. (Agrawal, 2021; Feng et al., 2020; Soltani et al., 2018; Verhoef et al., 2021). This is highly recommended because such technology facilitates the creation of solutions to problems and a quick and effective response to market issues. More and more customers are demanding a seamless blended experience; at the same time, companies, whether in the industry or services sector, should provide conditions for salespeople to assume an omnichannel position for greater flexibility, visibility and connectivity across channels. Thus, sales technology can be used to leverage customer relationships, improve data collection and, consequently, employers' intrapreneurial practices.

Finally, this study also has implications for companies that supply sales technology. Since it can play an essential role in salespeople's intrapreneurial activities, these suppliers are not just able to find a niche in the market to promote available technology but can also explore and develop innovative technology oriented towards intrapreneurship.

5.2. Limitations and future research

Despite the various theoretical and managerial implications, this study does have some limitations, although they could offer opportunities for future investigations. Firstly, the study covers only Portuguese salespeople, and the sample is somewhat biased towards men, which limits its generalization. Therefore, studies considering other locations and more gender balance are suggested.

Secondly, the study only embraces sales technology as an antecedent of information systems and consequent intrapreneurial behaviour. However, other variables could be studied in the future related to the management of human resources (recruitment and selection, integration, performance evaluation, training and development) and/or in the arena of organization (capacity for innovation, research and organizational culture), for example.

Thirdly, this study does not explore moderating variables, so future studies could develop a more in-depth analysis of factors like education, age and generational differences and remuneration.

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Fourthly, this study has been limited to the analysis of antecedent variables of intrapreneurial behaviour, so future studies could also consider its outcomes, like the impact of intrapreneurship on the performance of salespeople and/or companies.

Fifthly, regarding the business context, this paper has only examined the differences between industrial and service companies but has not analysed the specific characteristics of the sector which could have an influence on intrapreneurial behaviour, depending on the complexity of the product or service offered. Future studies could consider these specific characteristics because complex products or services may encourage salespeople to develop creative solutions for customers based on venture behaviour. In contrast, simple products or services, because of restricted alternatives, might make low venture behaviour create a "Take it or leave it" system.

Finally, for future studies, it would also be recommended to consider the next step of the digital revolution, namely, artificial intelligence, and how it may influence intrapreneurial behaviour.

Author contribution

Conceptualization PMS; Data Curation PMS; Methodology PMS; Visualization PMS, APL, SFT; Software PMS; Formal analysis PMS; Validation APL, SFT; Writing Original Draft PMS; Writing- Reviewing and Editing APL, SFT.

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Appendix

Table A1

Constructs	Items	Code	Source
Use of sales technology by salespeople	I use technology to record customer call information.	USTS1	Adapted from Høgevold et al. (2021)
	I use technology to plan my sales activities.	USTS2	
	I use technology to carry out my sales activities.	USTS3	
	I use technology to prepare sales presentations based on my customers' specific needs.	USTS4	
Information system	I help create new knowledge for our company's information system.	IS1	Adapted from Silva et al. (2021).
	I share knowledge with other departments and co-workers.	IS2	
	I am able to support the marketing/sales decision process.	IS3	
	I am committed to incorporating newly-learnt knowledge into my daily operations.	IS4	
Strategic renewal behaviour	I undertake activities to realize change in my organization.	SRB1	Gawke et al. (2019).
	I undertake activities to change the current products/ services of my organization.	SRB2	
	I contribute ideas for strategic renewal for my organization.	SRB3	
	I conceptualize new ways of working for my organization.	SRB4	
Venture behaviour	I undertake activities to set up new business units.	VB1	Gawke et al. (2019).
	I undertake activities to reach new markets or communities for my organization.	VB2	
	I undertake activities that result in new departments outside of my organization.	VB3	

Constructs	Items	Code	Source
	I actively establish new collaborations with experts outside of my own profession.	VB4	

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