

Digital Transformation in Family SMEs: The Effects of Family Involvement, Culture, and Human Resource Skills

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Abstract – Digital transformation enables companies, including family SMEs, to survive and adapt to an environment full of change. Family SMEs have specific characteristics that affect every part of the company. Therefore, the objective of this research study is to examine the effect of family involvement, culture, and human resource skills on digital transformation. A quantitative study was conducted using structural equation modeling with SMART PLS 4 to analyze survey responses from 172 Moroccan family SMEs operating in the Souss-Massa region. The research results show a significant effect of family involvement on digital transformation. Moreover, organizational culture and the human resource skills of family SMEs significantly affect digital transformation. Consequently, family involvement in their businesses and organizational culture are key factors in the digital transformation. Human resources skills also explain the success of this process and the drive for family SMEs toward digital transformation. Future studies should use qualitative research to explore new familial factors that can affect digital transformation. Furthermore, comparative studies between family-owned and non-family-owned SMEs can explain how family businesses are different in terms of digital transformation.

Keywords – Digital transformation, family SMEs, family involvement, culture, human resource skills.

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1. Introduction

Digital transformation is the change that happens when digital technologies are adopted by businesses. These technologies can cause disruption and lead to new strategies. Businesses must adapt to two types of changes related to digital transformation. They have to deal with changes in their structure as well as with internal factors that may influence the outcome of the process of digitalization [1]. Therefore, family SMEs must respond to these changes and follow the new trends in technology.

Due to their particular characteristics, family SMEs are a special case when it comes to digital transformation. They are businesses in which family members participate in owning, governing, and managing the company [2]. Moreover, family members are close to the company's operations and management, which helps them make quick decisions. Family businesses also show that they can adapt faster than non-family businesses in the context of organizational change [3].

Digital transformation is an intense process that affects how a company and family members organize and how they act. Therefore, many leaders can sometimes influence the decision about digital transformation [4]. Studies indicate that family interests influence the implementation of digital technologies and the transformation of business models into digital ones [5], [6], [7]. Furthermore, the success of family businesses in the context of digital transformation and the adoption of technology depends on culture [8]. To be successful in this transformation, this process also requires human capital with positive attitudes and the capacity to operate in a digital environment [9].

In the current digital transformation era, studies that focus on family SMEs remain limited, which explains the interest in this research work. This study examines the effects of organizational characteristics on the digital transformation of family SMEs. Consequently, the central research question is:

To what extent do the characteristics of family SMEs affect their digital transformation?

This research paper starts by presenting the literature review and the hypotheses that reflect the various relationships among the variables. The methodology steps are then explained, and finally, empirical results are presented. This article offers several contributions to the scientific literature regarding change management in family SMEs in the context of digital transformation.

2. Literature Review and Hypotheses

This part of the literature review indicates relevant studies that are related to the present research topic and reflect the effects of the characteristics of family SMEs on digital transformation.

2.1. Digital Transformation in Family SMEs

Digital transformation is a process of radical change facilitated by innovative uses of new technological tools. It combines the exploitation of key competencies and resources with positioning companies as value creators [10]. Digital transformation applies to all businesses, including family-owned enterprises, regardless of their size or nature [11]. Furthermore, family companies are a specific type of business defined by the effect of one or more family members on the way the firm works through ownership of shares and the control of the company [12]. Furthermore, differences exist between family-owned and non-family-owned enterprises, which manifest in various facets of commercial operations, including strategic choices about technological innovation [8]. Family-owned small businesses face unique challenges due to the rapid advancements in technology [13]. Moreover, small family businesses are under significant pressure to adapt and incorporate a variety of technological strategies and solutions to ensure their competitiveness and long-term success [14], [15]. Families and their entrepreneurial successors govern family businesses. They often resist embracing digital technology owing to entrenched traditional work practices and the principles inherited from their predecessors [16]. According to [17], these businesses face particular obstacles as a result of their poor understanding of technology use. It is difficult to know exactly what risks come with digitization, but family founders can help spot new trends in the digital transformation era. Their willingness to take risks and innovate motivates them to experiment with new technologies and business strategies [18].

In general, studies of family structures have shown that they are unique because they have a specific culture, and the family is involved in the business in a special way. This involvement happens through ownership, decision-making, and the business's direction [12].

Additionally, family structures are both reluctant and willing to take risks, as the proprietors are primarily motivated by the desire to preserve their socio-emotional wealth, this dynamic explains why family involvement in management and family culture is associated with their organization [19]. Therefore, these factors have the capacity to affect the process of digital transformation within family SMEs.

2.2. Family Involvement and Digital Transformation

First and foremost, some research shows that family involvement in management can have a direct effect on the outcomes of technological innovation [20]. Concurrently, a high level of family involvement and control over businesses can affect the strategic responses of companies to the digital transformation trend. Family business owners are aware of the risks related to uncertain initiatives and can decide to ignore the opportunity of making substantial digital investments [21]. Developing a digital transformation strategy can be challenging for family businesses, particularly when family members participate in running the business [22]. Therefore, family involvement and control impact the development of the digital business model. This implication of family influences the organization's readiness for digital transformation [23]. The family's participation and involvement in management affect the aggressiveness in embracing technology [24]. Moreover, when families are involved, it can help the organization make better decisions, especially when it comes to adopting new technologies [25].

2.3. Organizational Culture and Digital Transformation

Organizational culture associated with family values can significantly influence digital transformation. Family structures frequently possess robust cultures that can either facilitate or impede the adoption of digital tools [26]. Additionally, the results of a research study conducted by [8] suggest that the implementation of digital technology and organizational success in the context of digital transformation are affected by the organizational culture of family businesses. Family SMEs usually aim to maintain tradition, and they rarely invest in digital technology, as the outcome could be uncertain and risky. Thereby, the family culture tradition affects the ability to adapt and be flexible in a changing environment [27].

Furthermore, some research has indicated the significance of organizational transformation in terms of culture, particularly a digital mindset, to achieve the full potential of implementing new technologies [28]. This is why it is imperative to concentrate on the organizational culture that facilitates the successful implementation of digital transformation.

Consequently, a cultural transformation that includes the alignment of the organization's values, norms, beliefs, and behaviors may facilitate digital transformation [29]. It can be anticipated that a culture that is receptive to risk, which actively fosters innovation and openly discusses failure, will have a beneficial impact on the use of new technologies [30].

2.4. Human Resource Skills and Digital Transformation

In the technological aspects, human competence is one of the key factors in transforming SMEs digitally. The aspect of human resources related to the availability of skilled workers with ICT expertise significantly impacts digital innovation [31]. SMEs can face obstacles to technological innovation due to the quality of their human resources [13]. Additionally, [32] have identified human skills as a challenge that organizations encounter when integrating new technologies into their operations. In addition, they underscored the necessity for organizations to allocate resources to comprehensive programs that provide employees with the skills and expertise needed for implementing technologies.

The adoption of digital technologies is driven by the skills of employees, which influence the digital transformation. This process necessitates human capital with effective behaviors and the ability to operate in a digital environment [9]. Next, a study conducted by [33] suggests that the success of technological transformation is adversely affected when human resources skills are limited. Employees digital skills influence the digitalization of processes within organizations [34]. Additionally, [35] demonstrate that the digital skills of employees affect the digital transformation of SMEs. Human resources, with their talents and knowledge, are the foundation of digital transformation. It is difficult to identify the right digital solutions that can be adapted to existing business models because many companies lack the necessary skills to implement ICT [36]. Furthermore, [37] suggest that the skills of employees moderate the relationship between organizational factors and digital transformation.

2.5. Conceptual Framework and Hypotheses Development

The literature review provides a clear understanding of the variables that are likely to affect the digital transformation of family SMEs. There is a lack of research on how the characteristics of family SMEs affect their digital transformation. Therefore, this study addresses these aspects and creates scientific value. This research study aims to investigate organizational characteristics that affect the digital transformation of family SMEs, specifically those related to family involvement, culture, and human resource skills.

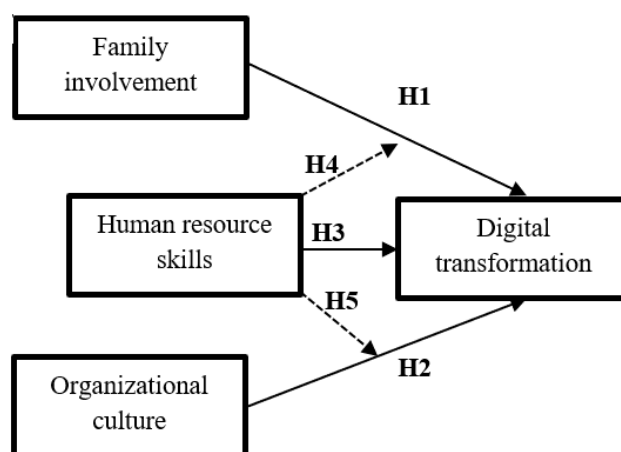


Figure 1. Conceptual model

The conceptual model as illustrated in Figure 1 indicates the various relationships between the selected variables as documented in the literature. In summary, various organizational characteristics have an effect on the digital transformation process and the orientation toward the use of technologies within family businesses, particularly family SMEs. At this point, the following hypotheses are proposed:

H1: Family involvement has a significant effect on digital transformation.

H2: Organizational culture has a significant effect on digital transformation.

H3: Human resource skills have a significant effect on digital transformation.

H4: Human resource skills moderate the effect between family involvement and digital transformation.

H5: Human resource skills moderate the effect between organizational culture and digital transformation.

3. Methodology

The objective of the present research is to examine the various relationships among the explanatory variables (family involvement, organizational culture, and human resource skills) and the variable to be explained (digital transformation of family SMEs). Therefore, a quantitative study was implemented in the form of a questionnaire addressed to the leaders of family SMEs.

To analyze the data, the partial least squares (PLS) approach based on the structural equation model was used. This technique enables the analysis of relationships between independent and dependent variables represented by latent components. The research was conducted in Morocco, specifically targeting family SMEs in the Souss-Massa region.

In this regard, a non-exhaustive list of 450 SMEs was collected from the regional chamber of commerce, which, in the Moroccan context, are companies with a workforce of between 10 and 200 people. Questionnaires were distributed to these companies, and 224 responses were received. After this stage, the responses were filtered. Only 172 family SMEs were then selected that met two criteria for targeting family SMEs. Family businesses are then identified as those managed by at least one family member and holding the majority of the shares [38]. These last two criteria were measured using two dichotomous variables, each with two options: 1 (yes) or 2 (no).

In terms of operationalizing the variables, inspiration was drawn from various empirical studies and items related to the chosen variables as presented in Table 1. These items were adapted for the objectives of the questionnaire. In order to ascertain the extent to which respondents agree with the items, a five-point Likert scale was implemented.

Table 1. Research items

Variables	Items	References
Digital transformation (DT)	DT1	[39], [10], [40]
	DT2	
	DT3	
	DT4	
Family involvement (FI)	FI1	[23], [21], [41], [42], [24]
	FI2	
	FI3	
	FI4	
Organizational culture (OC)	OC1	[26], [30], [8], [29]
	OC2	
	OC3	
	OC4	
Human resource skills (HRS)	HRS1	[33], [36], [13]
	HRS2	
	HRS3	
	HRS4	

4. Results

This section shows the results from the data collected, which represents the selected variables.

4.1. Demographic Profile Analysis

The information in Table 2 shows the characteristics of the leaders who answered the questionnaire. First, (72.7%) of the study's participants were men, and (27.3%) were women. In terms of age distribution, almost half of the respondents are between 36 and 45 years old, this age group comprises (50.6%) of the leaders. The second largest group consists of leaders aged between 25 and 35 years, this group makes up (30.2%) of the leaders.

The remaining respondents are divided into two groups: (18%) for leaders over 45 years and (1.2%) for leaders under 25 years. Regarding the educational level of the leaders, most of the respondents have completed university studies, comprising (46.5 %) of the respondents. The second group consists of leaders who have a graduate degree, representing (36.6%) of the respondents. Finally, (16.9%) of the respondents are leaders with a secondary education level. Next, the industry of businesses is identified. Commerce is the biggest at (44.8%), followed by manufacturing at (29.1%), and finally, services at (26.1%).

Table 2. Demographic profile of the respondents

Demographic variables	Categories	Frequency	Ratio (%)
Gender	Female	47	27.3
	Male	125	72.7
Age	Under 25 years old	2	1.2
	25-35 years old	52	30.2
	36-45 years old	87	50.6
	Over 45 years old	31	18
Educational level	High school	29	16.9
	University	80	46.5
	Graduate school	63	36.6
Industry	Commerce	77	44.8
	Manufacturing	50	29.1
	Services	45	26.1

4.2. Reliability and Convergent Validity

Table 3 shows the composite reliability, which measures how consistent the scales of all constructs are. It indicates excellent internal consistency in the constructs of digital transformation ($\rho_c = 0.889$), family involvement ($\rho_c = 0.847$), human resource skills ($\rho_c = 0.888$), and organizational culture ($\rho_c = 0.907$). These thresholds are acceptable as long as they have a composite reliability that is more than 0.7. Then, Cronbach's alpha thresholds are determined, which also represent how reliable variables are. The values of the thresholds obtained for each variable are acceptable and complementary as long as the majority are above 0.7.

The table of reliability and validity also shows AVE, which estimates the proportion of variance among the constructs. The results from this phase show the average variance extracted (AVE) of the sets of constructs, which had an excellent value at the organizational culture (AVE = 0.712). The results reveal the AVE of digital transformation (AVE = 0.667), family involvement (AVE = 0.582), and human resource skills (AVE = 0.666).

These values are acceptable when they exceed 0.5 within the framework of convergent validity [43]. Thereby, the measurement model is consistent with acceptable convergent validity as long as the AVE and composite reliability values are satisfactory.

Table 3. Reliability and validity

	Composite reliability (rho_c)	Cronbach's alpha	Average variance extracted (AVE)
DT	0.889	0.833	0.667
FI	0.847	0.760	0.582
HRS	0.888	0.842	0.666
OC	0.907	0.884	0.712

4.3. Discriminant Validity

The discriminant validity of the constructs allows verification of the items in the studied variables and ensures they accurately represent the phenomenon under study. This validity can be measured using the indicators from the cross-loadings and the Fornell-Larcker.

Table 4 shows the cross-loadings, which clarifies the correlation between the latent factors of each variable. The goal is to keep the indicators with a loading above the constructs that will measure them [43]. According to this table, it can be concluded that the variables are adequately measured using items where the majority of the items for each variable are rated above 0.7.

Table 4. Cross-loadings

	DT	FI	HRS	OC
DT1	0.785	0.602	0.057	0.047
DT2	0.784	0.569	0.130	0.064
DT3	0.868	0.659	0.244	0.070
DT4	0.828	0.629	0.295	0.054
FI1	0.467	0.713	-0.039	0.096
FI2	0.567	0.709	-0.020	0.077
FI3	0.639	0.844	0.104	0.039
FI4	0.608	0.779	0.127	0.077
HRS1	0.162	0.047	0.835	0.161
HRS2	0.214	0.008	0.863	0.188
HRS3	0.063	-0.016	0.765	0.105
HRS4	0.222	0.125	0.796	0.095
OC1	0.038	0.070	0.217	0.789
OC2	0.006	0.002	0.250	0.741
OC3	0.053	0.080	0.134	0.882
OC4	0.086	0.093	0.129	0.947

Table 6. Hypotheses testing

Hypotheses	Path coefficient	T statistics	P-value	Result
H1: FI → DT	0.782	13.224	0.000	Supported
H2: OC → DT	0.323	4.773	0.001	Supported
H3: HRS → DT	0.214	2.284	0.017	Supported
H4: HRS x FI → DT	0.066	0.800	0.424	Rejected
H5: HRS x OC → DT	0.107	1.288	0.198	Rejected

Next, the Fornell-Larcker indicator is identified, which is one of the conditions for discriminant validity. This criterion clarifies all the correlations between the indicators of each variable and even between these latent variables. Discriminant validity is ensured when all the values in a column are less than the value on the corresponding diagonal [44]. Table 5 shows that the values of the diagonal elements of each factor are higher than the values of the correlation coefficients with the other factors, which supports the discriminant validity of the model.

Table 5. Fornell-Larcker

	DT	FI	HRS	OC
DT	0.817			
FI	0.754	0.763		
HRS	0.230	0.066	0.816	
OC	0.072	0.092	0.172	0.844

4.4. Hypotheses Testing

Table 6 shows the relationships between the variables using the bootstrapping method. At first, it was considered that family involvement has a significant effect on digital transformation.

The hypotheses testing table confirms a robust connection between these two variables ($\beta = 0.782$; $p < 0.05$). Thereby, H1 is supported. Additionally, H2 is supported when the findings suggest that organizational culture has a significant effect on the digital transformation ($\beta = 0.323$; $p < 0.05$). Furthermore, human resource skills have a significant effect on digital transformation ($\beta = 0.214$; $p < 0.05$). Therefore, H3 is supported.

With regard to the role played by human resource skills in moderating the effect between family involvement and digital transformation, the results obtained ($\beta = 0.066$; $p > 0.05$) lead to reject H4. Similarly, with regard to hypothesis 5, human resource skills do not moderate the effect between organizational culture and digital transformation ($\beta = 0.107$; $p > 0.05$). Thereby, H5 is rejected.

5. Discussion

This research work presents a view of the characteristics of family SMEs and their effect on digital transformation. In the previous section, the hypotheses were tested, which were developed from the literature.

The findings of the hypotheses tests demonstrate the significant effect of family involvement on the digital transformation of family SMEs. This result is consistent with the study by [21], which indicates that family involvement in businesses affects how companies respond to the trend of digital transformation. Therefore, the involvement of family in their businesses can directly influence their digital innovation readiness [23]. Family engagement can help the organization make better decisions, especially when it comes to adopting new technologies. Families that own and participate in a business should be able to influence the decision-making process in a beneficial way to ensure the business's survival [25].

Family owners play various roles in the digitalization process. There is a connection between family influence and their ability to transform digitally [45]. When families are involved, companies are more likely to deal with the uncertainty of specific actions [46]. All these elements can help make the switch to digital transformation.

Regarding hypothesis 2, it was discovered that the organizational culture of family SMEs significantly affects digital transformation. This aligns with the idea that the culture of a family's small business leads to digital transformation. Family businesses frequently possess a robust culture that is transmitted from one generation to the next. This culture can either help or stop the use of digital practices [26]. These results align with the study by [8], which indicates that the culture of family businesses affects how they use digital tools and how successful they are when changing to digital transformation.

Generally, the values and norms of the dominant culture in which a family business operates influence the most significant decisions made within that business. These values and norms guide the decisions of family members [47]. Consequently, the digital transformation of family SMEs is affected by organizational culture in the context of this research.

The findings of the present research also support the idea that human resource skills have a significant effect on digital transformation. Employees' digital skills influence the digital transformation process, which is the main reason that organizations adopt digital technologies [9]. In addition, the results of H3 are similar to the findings of the study by [35], which shows that the digital skills of employees have an effect on the digital transformation of SMEs in general.

Thereby, having skilled people to use new technologies makes the digital transformation process stronger. It also helps promote an environment based on digitalization and supports the rapid evolution of companies toward new trends. Human capital, which includes skills and knowledge, is the most important part of digital transformation [36]. Technological transformation is made possible by the human resources involved in sharing knowledge. And for this reason, the human resource skills of family SMEs constitute an essential factor in their digital transformation.

The findings of hypothesis 4 indicate that human resource skills do not moderate the effect between family involvement and digital transformation. Similarly, human resource skills do not have an effect on the relationship between organizational culture and the digital transformation of family SMEs. Therefore, these are in the opposite direction of the study by [37] that human resource skills can have a moderating effect between organizational factors and digital transformation.

To conclude this part, the empirical results offer contributions to the scientific literature regarding studies on family SMEs and indicate that their digital transformation is driven by family involvement, organizational culture, and the skills of their human resources.

6. Conclusion

The aim of this research is to investigate the various relationships among the characteristics of family SMEs and their digital transformation. Literature on the subject shows that family involvement, the culture, and the skills of human resources can affect digital transformation. In addition, this study specifically targets family SMEs in the Souss-Massa region of Morocco.

The findings confirm that the digital transformation of family SMEs is significantly affected by family involvement. It guides these businesses to use new technologies and create structures that can adapt to new trends. Moreover, the study supports that organizational culture and the human resource skills of family SMEs significantly affect their digital transformation. Regarding the moderation variable, human resource skills do not moderate the relationship between organizational characteristics and digital transformation. The results of this study contribute to the scientific literature, especially regarding new practices within family SMEs, where research on these topics in the context of this type of business is relatively rare.

This research suggests that the family leaders of SMEs must be vigilant during the phase of adopting new trends and stay up to date with the practice of new emergent technologies in their organizations to ensure survival.

Second, using digital tools in family SMEs needs investment and the development of skills and knowledge of human resources. Furthermore, when leaders and human resources communicate openly, it helps make decisions about digital transformation more consistent. There are certain limitations related to this research study that can be developed by other researchers. This study is based on family SMEs from different industries, which presents the problem of homogeneity in the sample. Next, the study is limited to the Souss-Massa region in the Moroccan context, which presents an issue of generalizing the results. In the future, it is suggested that researchers should use qualitative studies to explore new familial factors that can affect digital transformation. Furthermore, comparative studies between family-owned and non-family-owned SMEs can explain how family businesses are different when it comes to digital transformation.

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