

Knowledge Management, Innovation, Technology and Direct Marketing as Antecedents of Data Mining: The Mediating Role of Direct Marketing in Saudi Banking Sector

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Abstract

The main objective of the present research was to examine the relationship among innovation, technology, knowledge management, direct marketing and data mining. Additionally, present study also examined the mediating impact of direct marketing in present research. For data collection, questionnaires were distributed among the employees of banks of KSA. The response rate of usable questionnaires was 73%. The PLS-SEM technique was adopted to analyse the collected data. The data analysis showed that the knowledge management, technology and innovation significantly impact the direct marketing. Moreover, data mining of banks also has a direct impact by direct marketing. In the end, direct marketing significantly mediates among knowledge management, innovation, technology and data mining. Thus, all the propose hypothesis are supported by the findings of the study. Present study fills the gap of application of data mining into the strategic level of the banking sector. Moreover, the findings of the study are important for the policy makers and academicians of the banking sector in KSA.

Keywords: *Data mining, Direct Marketing, Knowledge Management, Banking sector, Saudi Arabia.*

Introduction

The main reason to use direct marketing is to develop and maintain a good, as well as direct, relationship with buyers as well as suppliers of one or more services and products. In the context of marketing there exist two direct approaches towards communication, namely direct marketing and mass marketing. Mass media, such as television, radio and print media, is used in mass marketing, whereas a potential customer is identified in direct marketing. The competition at the global, as well as local, level is mounting, resulting in the trends of direct marketing increasing on a day-by-day basis. Another reason for the increase of direct marketing is the cost issue (Karaxha, Tolaj, & Abaz, 2016). Direct marketing is a critical area where there exists an application of artificial intelligence, data warehousing, and data mining. For the purpose of direct marketing, standard data mining procedures can be applied. There is

a need to develop some specific algorithms in order to develop and apply for direct marketers to make decisions in an effective manner (Marinakos & Daskalaki, 2017).

Data mining is defined as the mechanism to find the trend and pattern which is unknown in past by using information which is already available to develop the model. On the other hand, it's also been defined as the process of exploration and selection of data in order to build the models by using large number of data stores in order to uncover past patterns which were not known in past. In today's arena, data mining is not a new concept. In the real world, it's been extensively and intensively used for the purpose of fraud detection and credit scoring by financial institutions. Moreover, it's also been used for store layout, market segmentation, retailers, direct marketing, cross selling, manufacturing and quality control (Malik, Abdallah, & Ala'raj, 2018).

The present era is the era of organization, which is knowledge based. Knowledge management is very important in order to find the new resources. There are many new concepts being discussed in knowledge management. These concepts have been focused to maintain a good relationship with customers, not only to sell the products, but also to gain knowledge and information from the customers (Mahawrah, Shehabat, & Abu-Shanab, 2016).

In order to create customer value, knowledge management has become critical. In this situation knowledge has become an important strategic source for any firm. In order to apply and utilize knowledge management at the optimum level, it is important that organizations must have a very clear understanding on the way knowledge is formed and how it can be applied. The management of knowledge is required for both outside and inside the firm. Later it can be translated into strategy and applied in the organization (Xue, 2017).

Change process within organization is led by innovation. Innovation also brings change to the market offerings of the organization and become critical weapon which can be used by the market strategists to win the markets and customers. Basically, innovation leads towards gaining a competitive advantage and convert it into a sustainable competitive advantage. Researchers mentioned that the basic purpose to do business is to create customers (Kanagal, 2015).

On the other hand, there are two basic functions of the business organization; innovation and marketing. Competencies and assets are used by innovations. These assets and competencies of the organizations include knowledge and skills for both management and technical skills of the firm, combined with process of innovation, in order to create a different or new marketing offerings. If these new or changed marketing offerings become successful, they

will bring a lot of value to the organization. Intellectual property is also created by innovation, which is considered as the basic asset of the organization. Intellectual property includes industrial designs, trade secrets, patents and copyrights. Organization can take advantage of innovation process only in the situation when the focus of the organization is to develop organizational capabilities along with decision structures, behaviours, skills and mind-set in the environment of focused analytics, business processes, efficiency, flexibility and global resources (Jones, Harrison, & Felps, 2018).

Among the many gifts from god, technology is holds its place as one of the most important . Technology is considered as the mother of science, art and civilization. The way we live is dramatically changed by technology. Life is redefined by technology in a very big manner. In fact, technology plays a fundamental role in almost every sector of our lives. A number of manual tasks can be automated due to technology. There is very important application of technology in real life. The technology in real life, so much so that is has changed our lives for the better. All fields of life are changed by technology. Therefore, the process of learning and teaching has become enjoyable because of technology (Raja & Nagasubramani, 2018).

In KSA, the banking industry is the pillar of their financial institutions. As KSA is an Islamic country, so Islamic banking has become a very important role to provide finances to the public and for business; for personal use and businesses (Lone, Aldawood, & Bhat, 2017). In this scenario competition among banks is mounting. Therefore, for every bank data Mining is important to track their customers and enhance their business. So, the basic purpose of the present study is to examine the impact of knowledge management, technology, and innovation on Data mining in Islamic banks of KSA.

Literature Review

Data Mining

The process by which researchers extract the data pattern, which is hidden, is known as data mining. Data mining is used most commonly in many practices, like scientific discovery, detection of fraud, surveillance and marketing. Generally, data mining process is defined as the process of data analysis from a number of perspectives and summarizing the data into information that is useful. The information developed from the database can be used to either minimize the cost, enhance the revenue or for both purposes. The user of data mining can use the obtained data from several different angles and dimensions. Later the data can be

summarized and categorized. Basically, data mining is the process in which relationships are found by the researchers among the databases that have large relations (Malik et al., 2018).

Data mining is the important and powerful tool through which researchers can find patterns and relationships among the data. In-fact, hidden information and patterns are discovered by data mining. Extraction of information is the main purpose of the data mining process from the set of data. Later this information is processed into a structure, which can easily be understood by all users for further use. Organizations can use social networks in a number of activities of business, for example to manage reputation of organization, communication of employee, PR, customer services, connotation, NPD, idea generation and marketing research. (Sharma, Sharma, & Dwivedi, 2017).

Direct Marketing: Relationship with data mining

In order to create value for the customer, organizations use the technique known as marketing. It is very important that organizations used marketing in order to develop a strong relationship with all stakeholders. Moreover, marketing plays an important role to enhance sales, revenue and profits for the customers, which in turn impacts the long-term equity of the customer (Bengoa, Maseda, Iturralde, & Aparicio, 2020). In literature there are two types of marketing methods discussed, namely direct marketing and general marketing. In general marketing mass media is used by the organizations. The mass media includes television, radio and many other sources by which they can target the customers without taking account their preferences and characteristics. On the other hand, several different databases are by the organizations to understand the purchase behaviour of the customers in direct marketing (Miguéis, Camanho, & Borges, 2017).

Using databases for direct marketing consist of a large range of application of marketing, including targeting and segmentation. The process of formulation of the strategy and its implementation involves interactive utilization of advertising media with the aim to stimulate a change in the purchase behaviour of the customers. In other words, the main purpose of direct marketing is to understand the preferences of the customers by which organizations are allowed to plan explicitly the interactive approach regarding the customers solely on the basis of their needs (Kim & Kumar, 2018).

There are a number of sub-disciplines while marketing a product. One major such discipline is direct marketing in which it is allowed to send message to the user through a number of means, such as direct mail, telemarketing and email. This marketing tool is important because

traditional advertisement, like TV, newspaper and radio, may not be the best way to utilize the promotional budget. For this reason, a number of organizations use direct marketing for a specific market.

For instance, an organization that used to sell products related to prevention of hair loss must look for the radio station through which they can appeal to the market which may experience this specific problem. It's not guaranteed that the targeted group of people group of people will be listening to radio or will look at the newspaper ad or watch the TV commercial. Due to this reason they may not be able to reach at the required target market. In this scenario, there is a need of direct marketing. It is important for the organizations to invest on direct marketing, rather than wasting money on scattered advertisement. By using direct marketing organizations can target specific target customers. The organizations that are involved in direct marketing keep the contact information of customers of different demographics. The organization selling dog shampoo may get benefit from the contact numbers of pet storeowners or the participants of dog show. What works best for direct marketing is a scenario in which all the users accept that their personal credentials will be stored and used for marketing purposes. (Chang & Zhang, 2016; Suman, Anuradha, & Veena, 2012).

In research, direct marketing is a relatively new business model, which involves one to one communication between the customer and the business. In the real world there exist a large potential of data mining in which a large number of phases are involved, namely management, refinement, representation, evaluation of knowledge, formation of patterns, generation of hypothesis, initial processing and preparation of data. Researchers pointed out that there must be few direct marketing processing involved in data mining, namely promotion of clients, finding patterns, pre-processing and preparation of data (Mitik, Korkmaz, Karagoz, Toroslu, & Yucel, 2017; Ou, Liu, Huang, & Zhong, 2003). Therefore, there exists the relationship between direct marketing and data mining.

Knowledge Management: Relationship with direct marketing

In literature, knowledge management plays a critical role in the management of a business. The application of knowledge management has been extended in the field of management. With the help of knowledge management organizations are helped to transfer the skills and knowledge which is already organized after proper selection for the employees working in the organization (Amoah, Drechsel, Schuetz, Kranjac-Berisavjevic, & Manning-Thomas, 2009; Santoro, Vrontis, Thrassou, & Dezi, 2018).

Organizations can use knowledge management for the process of developing activities as the tool to implement the already available opportunities in the market, which is already very competitive. Doing tasks in a better and faster way is not enough by the organizations to gain a competitive advantage in the market. The available knowledge must be considered by the organizations to gain a sustainable competitive advantage. It is very important to use the available knowledge effectively to gain and sustain the competitive advantage (Gunjal, 2019; Liao, Chen, & Hsieh, 2011).

Knowledge management can play an important role in order to create change within the organization as firms can learn the new knowledge and apply this acquired knowledge to change the structure of the organization. The ability of the organization to take decisions can be improved by using information and knowledge in a proper manner. As a result, the quality of services of the organization can improve, which will eventually increase their revenue (Idris & Kolawole, 2016; Jennex, Smolnik, & Croasdell, 2014).

In literature, several researchers have pointed out relationship among knowledge management and direct marketing. The organizations which organize their system of knowledge management and sales knowledge have a much better position in the market. The system of managing knowledge plays critical role to manage all files and information and constant access is provided to the persons who are authorized. A number of databases have a feature of search through, which allows users to find a number of different things through tags, filters and paths, due to which it has become easier to look for information. In this context better support of knowledge management plays a critical role as well. Within a project, all stakeholders remain up to date because of a good system of knowledge management. In order to minimize the wrong use of marketing information, such as market analysis, messaging, presentations, price lists and latest flyers, marketing team keep all this information up to date. A lot of effort is saved by the organizations for the employees with the help of knowledge management (Bang, Dholakiam, Hamel, & Shin, 2010; Kumar & Singh, 2017).

With the help of using tools of data mining, hidden knowledge can be uncovered. Organizations can better understand the customers and can better transform this knowledge into an effective marketing strategy. This leads to the fact that the knowledge management system of the organization plays a very important role in direct marketing.

Innovation: Relationship with direct marketing

Success of the organization is mainly dependent upon the factor that the ability of the organization to innovate the products or services it is offering. Organizations with the motivation to innovate the products successfully and quickly have to use the necessary information available by motivation to bring innovation in their ideas and offerings. The ability of the organization to innovate shows the ability of the organization to use knowledge on the regular manner by which they can innovate the ideas through a very multidimensional and complex way, as a number of different factors are available which make its emergence possible. Transformation of ideas and knowledge into new systems, processes and products shows the ability of the organization to innovate. This innovation is helpful for both shareholders and organization (Roach, 2009; Tan & Lau, 2016).

Innovation and development of new ideas are key priorities of organizations, to enhance their ability in this stance. Innovation has become a resource for the organization to gain a competitive advantage in this intense competition at the global level. A number of different ways are addressed by innovation by using innovation at organizational level, project level, team level and individual level (Roach, 2009; Schuster et al., 2016).

Innovation is basically defined in terms of nature and degree of innovation in a certain organization. Innovation within organization occurs because of a proper innovation process, which basically translates the organizational concept of innovation. The basic characters of innovation mostly do not change from one organization to the other and they are also very closely related to each other in terms of industry and the context in which innovation is done. A number of different features are also mentioned by different authors, like radical innovation, incremental innovation and competency of organization to innovate (Aramendia-Muneta, 2012; Diyanova, Guba, Guseva, & Popova, 2019).

As mentioned above, direct marketing channels are one of the recent developments in the field of marketing. Email is one of the most recent developed technologies that plays a very important role in order to target the audience and target customers. A number of studies have proven that there exist a direct relationship between innovation and direct marketing (Joueid & Coenders, 2018).

Technology: Relationship with direct marketing

There are a number of perspectives in which technology is described in past literature. By this way, research design and the way things are transferred among the stakeholders. A number of different definitions are provided regarding technology. Researchers mentioned that there are two basic components of technology, namely physical components and informational components. The informational components consist of functional areas, skilled labour, reliability, quality control, production, marketing and management. On the other hand, physical component consists of processes, techniques, blueprints, equipment's, tooling and products. The initial definition was presented regarding technology in terms of configuration, which observes that transfer of objects, mainly relies upon subjectivity, but they are specific resets regarding products and processes. The recent studies conducted regarding technology have discovered a connection between technology and knowledge. Additionally, the research process is granted more attention regarding technology. Later studies defined technology in terms of two basic components, namely doing things and technique. The component technique is also termed as knowledge by the authors. Researchers pointed out that technology do not only mean that the technology related to the product or service, but it also deals with the association of information and knowledge required to use the application and products (Galloway, 2018; Risselada, Verhoef, & Bijmolt, 2014).

Industries all around the globe are being transformed because of technology. A number of different digital avenues and marketing channels are also being provided by technology to enhance the growth of organizations. Because of this increase in technology, the traditional marketing channels are disrupted. Interaction among people is increased and the reach to social networks is also enhanced as well. A number of challenges being faced in terms of mail marketing is removed by technology. With the help of one button click, now the marketers send the mail to the target market. A notification is also delivered to marketer when a mail is delivered to the customer. This helps the marketer to decide the best time for them to get feedback from customers. Technology now also impacts the direct selling of products on social networks, mobile devices and store websites (Harrison & Hair, 2017).

On the basis of above argument, following hypothesis are developed

H1: Direct Marketing has a significant impact on data mining

H2: Innovation has a significant impact on direct marketing

H3: Knowledge management have significant impact on direct marketing

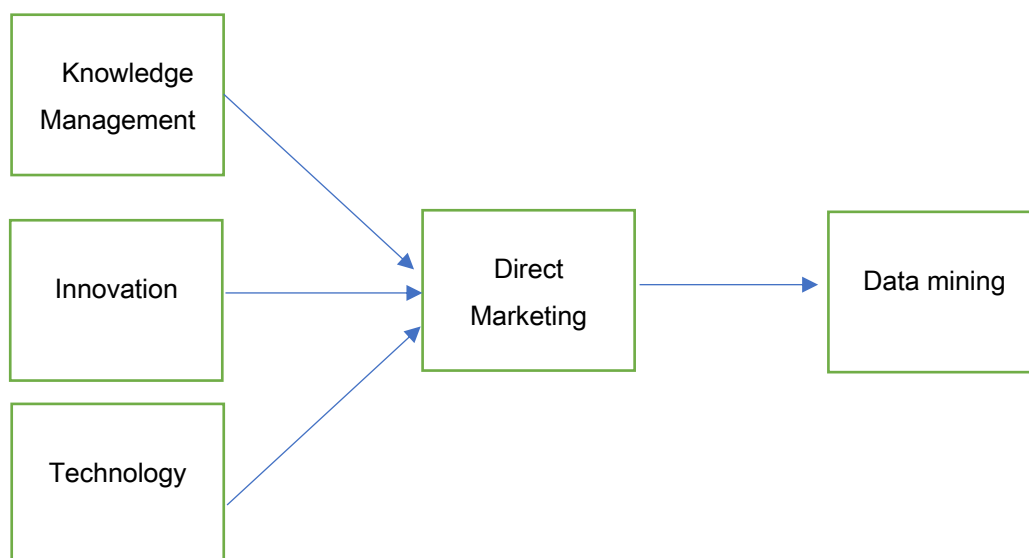
H4: Technology has a significant impact on direct marketing

H5: Direct marketing mediates significantly between innovation and data mining

H6: Direct marketing mediates significantly between knowledge management and data mining.

H7: Direct marketing mediates significantly between Technology and data mining

Research Framework



Research Methodology

Present research is conducted in order to examine the relationship among technology, knowledge management, innovation, direct marketing and data mining. The population of present research was employees working in the Islamic banks of KSA. The author of the present study for the data collection adopted the convenience sampling technique. For this purpose 520 questionnaires were distributed among the employees. 394 questionnaires were returned from the distributed questionnaires. Thus, the usable response rate was 75.6%. Initial screening of the data was conducted using SPSS 25. Later, for the analysis purpose, the researcher adopted the PLS-SEM technique. This technique is mostly used for numeric analysis, testing of hypothesis and statistical analysis.

Past studies were used to adopt the items of the study. Data mining was used by analysing 4 items adopted, direct marketing was measured by using 3 items, innovation was examined using 3 items, knowledge management was measured using 5 items and technology was measured using 3 items. (Shoaib, Shafi, Dan, Muangna, & Nazeer, 2015).

Research Analysis

As the data is collected from the respondents, data is analysed by the researcher. Before starting analysis of the data, the author conducted a preliminary analysis of the data. This section included testing of outliers, CMV, multicollinearity and missing value analysis. From these tests it was found that there was not that big a problem with the data under consideration. Demographic analysis was the next step after the examination of the data. From the demographic analysis, it's been observed that 73% of the respondents are male and 27% are female. In terms of age groups of the respondents, 36.1% of the respondents fall under 20-30 years of age, 29% falls less than 31-40 years of age while the remaining are above 40 years of age. In terms of education of the respondents, diploma holders were only 1.2%, bachelor's degree holders were 51.2%, and remaining 47.7% of the respondents were master's degree holders. The mentioned detail is can also be seen in table 1 below.

Table 1: *Demographic statistics of respondents*

Demographic variables	Category	Frequency	Percentage
Gender	Female	106	27%
	Male	291	73%
Marital Status	Married	322	81.3%
	Single	75	18.7%
Age	Below 20	0	0%
	20-30	143	36.1%
	31-40	115	29%
	Above 40	138	34.9%
Highest Education	Diploma	5	1.2%
	Bachelor	204	51.2%
	Masters	189	47.7%

During this research the PLS-SEM approach is employed for the further analysis of the data. Following Vinzi, Chin, Henseler, Wang (2010) Smart-PLS software is used. PLS-SEM user

has to go through two steps; measurement model and structural model. First step is the measurement model in which researcher assess the average variance extracted (AVE), composite reliability (CR), convergent validity, and internal consistency reliability of the data.

Hair Jr, Sarstedt, Hopkins, and Kuppelwieser (2014) defined convergent validity as the level the set of variables of the study converge in the process of measuring a certain concept. Convergent validity is determined by testing factor loading, AVE and CR of items of study. All of the items involved in the study had the factor loading more than 0.70 showing all loading of the items of study are in recommended criteria.

The CR of the items also confirms convergent validity of the data. The test of CR reflects that items involved in the study show the latent construct. Later, AVE was also assessed by the researcher to validate the convergent validity. The shared variance along with measurement errors of the items involved is reflected in values of AVE. Researchers mentioned that minimum acceptable value of AVE is more than 0.5 of every construct (Barclay, Higgins, & Thompson, 1995). In the present study, all values of AVE is above the threshold level. Table 2 below shows the AVE, CR, Cronbach Alpha and factor loadings.

Table 2: *Factor loading, Cronbach alpha, composite reliability, and AVE of the latent constructs*

Construct Name	Items	Loading	C-Alpha	CR	AVE
DM	DM1	0.823	0.928	0.949	0.823
	DM2	0.893			
	DM3	0.926			
	DM4	0.886			
DTM	DTM1	0.940	0.921	0.950	0.863
	DTM2	0.925			
	DTM3	0.921			
INO	IN1	0.809	0.788	0.876	0.702
	IN2	0.872			
	IN3	0.832			
KM	KM1	0.826	0.926	0.923	0.707
	KM2	0.849			
	KM3	0.816			
	KM4	0.833			
	KM5	0.878			
TEC	TEC1	0.923	0.889	0.931	0.819
	TEC2	0.903			
	TEC3	0.888			

In order to validate the data measurement model, it is very important to examine the discriminant validity of the data. Moreover, before examining the hypothesis of the study, discriminant validity must be assessed. Difference among the items of the construct is reflected through the discriminant validity showing there is no overlapping among the items. In order to measure discriminant validity, Fornell and Larcker (1981) criteria was adopted in the present study in which AVE square roots of every construct at diagonal are placed in the correlation.

Table 3: *Discriminant validity (Fornell & Larcker)*

	DM	DTM	INO	KM	TEC
DM	0.907				
DTM	0.545	0.929			
INO	0.531	0.550	0.838		
KM	0.334	0.260	0.347	0.841	
TEC	0.437	0.411	0.422	0.193	0.905

After assessing measurement model in the present study, the structural model was evaluated by the researcher. In this step, the proposed hypothesis in the present study is assessed to determine the inner model (Joseph F Hair, Ringle, & Sarstedt, 2013). Bootstrapping procedure was adopted by the researcher to assess the statistical significance of the variables involved. Its been revealed from the results of the bootstrapping that all direct hypothesis proposed in the present study are accepted. Table 4 below shows the statistical significance among the proposed hypothesis of the study. According to table 4, H1 is accepted (beta= 0.545, t-value=12.646 and p-value-0.000), H2 (beta= 0.371, t-value=6.278 and p-value-0.000), H3 (beta= 0.157, t-value=0.048 and p-value-0.001), H4 (beta= 0.250, t-value=4.879 and p-value-0.000). the results of the direct relationships are mentioned in table 4 below.

Table 4: Direct Relationship

Hypotheses	Path	Beta	STDEV	T value	P Values	Decision
H1	DM -> DTM	0.545	0.043	12.646	0.000	Accepted
H2	INO -> DM	0.371	0.059	6.278	0.000	Accepted
H3	KM -> DM	0.157	0.048	3.240	0.001	Accepted
H4	TEC -> DM	0.250	0.051	4.879	0.000	Accepted

Later, the researcher in the present study tests mediation results. Table 5 below shows all of the mediation hypothesis proposed above are significant. Results shown DM mediates significantly between INO and DTM (beta= 0.202, t-value=5.095 and p-value-0.000). In the same sein, DM also mediates significantly among KM and DTM (beta= 0.086, t-value=3.090 and p-value-0.002). In the end, DM also mediates significantly among TEC and DTM (beta= 0.136, t-value=4.495 and p-value-0.000).

Table 5: Mediation Results

Hypotheses	Path	Beta	STDEV	T value	P Values	Decision
H5	INO -> DM -> DTM	0.202	0.040	5.095	0.000	Accepted
H6	KM -> DM -> DTM	0.086	0.028	3.090	0.002	Accepted
H7	TEC -> DM -> DTM	0.136	0.030	4.495	0.000	Accepted

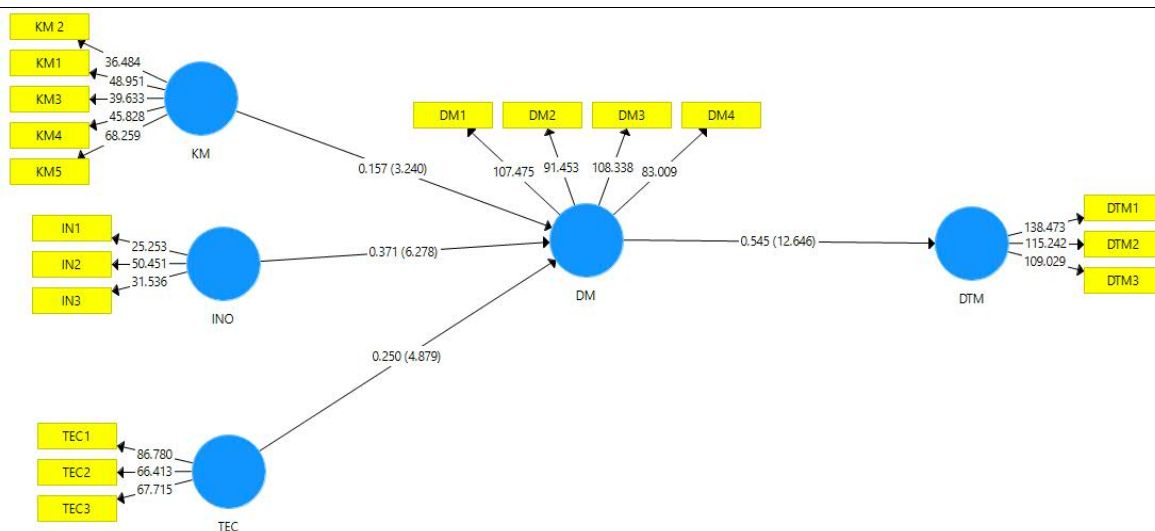


Figure 2: Structural Model

Another important criterion to assess the structural model of the study, researcher has assessed the R-Square value (Joe F Hair, Sarstedt, Ringle, & Mena, 2012). R square value shows how well the predictors of model explain the outcome variable and also termed as coefficient of determination. The values of R square shows the how much IV's of the study

explain DV (Elliott & Woodward, 2007). According to Chin (2010); Henseler, Ringle, and Sinkovics (2009) minimum value of R square should be 0.10. On the other hand, 0.19 value of R square is treated as weak, 0.33 as moderate and 0.67 as substantial. Keeping in view this criteria, R square value of DTM is weak (0.297) and DM as moderate (0.358). These values are mentioned in table 6 below.

Table 6: *R-Square of the latent constructs*

Latent constructs	R Square
DM	0.358
DTM	0.297

In the end, the researcher adopted blindfolding procedure in order to make sure the model's predictive capacity. Blindfolding procedure shows the predictive relevance. Q-square is examined through blindfolding in order to measure predictive capacity of the model. Researcher pointed out that the value of Q-square must be non-zero (Hair Jr et al., 2014). In this research, the Q- square values are 0.291 and 0.253, which are within the acceptable criteria. The value of Q-Square is mentioned in table 7 below.

Table-7: *Q- Square of exogenous variables*

Latent constructs	Q²
DM	0.291
DTM	0.253

5. Conclusion

The main objective of the present study was to examine the relationship between technology, direct marketing, innovation, knowledge management and data mining amongst the employees of banks of KSA. In the present study, PLS-SEM was employed. The study results demonstrate that the banking sectors should focus on their technology advancement to improve their direct marketing. In this way they can have proper information and knowledge regarding customers to improve their performance in the market. Moreover, the same is the critical role of knowledge management and innovation to improve data mining capability.

In the present era of immense competition, knowledge is the key for the organizations to survive in the market. The market at the international and national levels is getting intense. In this situation keeping proper knowledge regarding customer's preferences is the key. Later this knowledge is translated into the organizational strategies to enhance their sales, revenues and technology. Additionally, innovation also plays very important role for the service

providing organizations to improve their performance. Organizations having proper team working on the aspect of improving the capability of innovation are very important. They constantly monitor their already available products and services available in the market and the way customers perceive them. Keeping in view customers feedback, they bring innovation. Thus, the results of the study confirm the main objectives of the study that knowledge management, technology and innovation improve the direct marketing capability of the organization.

Presently, organizations have to think out of the box and find more methods, other than the conventional methods, of marketing. Among the new methods of approaching customers is the method of direct marketing. Through direct marketing, banks can focus on the individual needs of the customers and fulfil their needs more intelligently. Moreover, the products and services of the banks can be targeted to the customers in less cost as compared to mass marketing. As a result, the cost of organization will be reduced and organizational performance will enhance as well. The findings of the study indicate that direct marketing mediates significantly between knowledge management, technology, innovation and data mining. This shows that technology of the bank will enhance the capability of the organization of direct marketing. As a result, direct marketing mediates among technology and data mining. Furthermore, knowledge management capability of the organization also impacts the marketing capability of banks to reach the customer. Therefore, the direct marketing mediates between KM and DTM as well. Technology also helps the banks to reach the customers in a more effective and efficient way.

There are some limitations in the present study as well. The study is conducted in the banking sector of KSA. This study should be extended to the banks of other Asian regional banks as well. Moreover, composite impact of these variables should be examined on DM and DTM because technology and innovation capability of the organization is important for the knowledge management capacity as well. In the end, the findings of the present study are important for the practitioners and policy makers of the management science and banking sector.

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